

## Vincenzo Balzani

### List of publications

- 1- V. Carassiti and V. Balzani: "Fotochimica di sali complessi in soluzione. Nota II. rendimenti quantici e reazioni termiche di sostituzione nell'idrolisi acida di molibdenoottocianuro di potassio e wolframooottocianuro di potassio", *Annali di Chimica*, **50**, 630 (1960).
- 2- V. Carassiti and V. Balzani: "Fotochimica di sali complessi in soluzione. Nota IV. Cinetica della decomposizione fotochimica e termica del ferrocianuro di potassio", *Annali di Chimica*, **50**, 782 (1960).
- 3- V. Carassiti and V. Balzani: "Fotochimica di sali complessi in soluzione. Nota V. Cinetica dell'idrolisi basica fotochimica di molibdenoottocianuro di potassio e wolframooottocianuro di potassio", *Annali di Chimica*, **50**, 790 (1960).
- 4- V. Carassiti and V. Balzani: "Fotochimica di sali complessi in soluzione. Nota VI. Riduzione fotochimica di  $K_3Mo(CN)_8$ ", *Annali di Chimica*, **51**, 518 (1961).
- 5- V. Balzani and V. Carassiti: "Fotochimica di sali complessi in soluzione. Nota VII. Cinetica e meccanismo della fotoriduzione di  $K_3W(CN)_8$ ", *Annali di Chimica*, **51**, 533 (1961).
- 6- V. Balzani and V. Carassiti: "Fotochimica di sali complessi in soluzione. Nota VIII. Effetto del solvente sulla fotoriduzione di complessi ottocoordinati", *Annali di Chimica*, **52**, 432 (1962).
- 7- V. Balzani, A. Bertoluzza, V. Carassiti and A. Malaguti: "Cinetica delle reazioni di riduzione e di demolizione in soluzione di complessi di  $Ag(II)$ ", *Annali di Chimica*, **52**, 1052 (1962).
- 8- V. Balzani, A. Bertoluzza and V. Carassiti: "Reactions photochimiques d'oxido-reduction de composes de coordination et influence des alcools", *Bull. Soc. Chim. Belg.*, **71**, 821 (1962).
- 9- V. Balzani and L. Moggi: "Composti di coordinazione di alogenuri metallici. Nota II. Complessi tra alogenuri mercurici ed alcuni chetoni", *Annali di Chimica*, **53**, 166 (1963).
- 10- V. Balzani and L. Moggi: "Composti di coordinazione di alogenuri metallici. Nota III. Complessi tra alogenuri di cadmio e chetoni", *Annali di Chimica*, **53**, 173 (1963).

- 11- V. Balzani, V. Carassiti and R. Soto Loos: "Fotochimica di sali complessi in soluzione. Nota IX. Le reazioni di sostituzione nei sistemi  $\text{Fe}(\text{CN})_6^{4-}$ -dipiridile-luce e  $\text{Fe}(\text{CN})_6^{4-}$ -fenantrolina-luce", *Annali di Chimica*, **54**, 103 (1964).
- 12- V. Balzani, V. Carassiti and L. Moggi: "Fotochimica di sali complessi in soluzione. Nota X. Le reazioni fotochimiche dei complessi  $\text{K}_2\{\text{Fe}(\text{CN})_4(\text{dip})\}$  e  $\text{K}_2\{\text{Fe}(\text{CN})_4(\text{fen})\}$ ", *Annali di Chimica*, **54**, 251 (1964).
- 13- V. Balzani, A. Drusiani and L. Moggi: "Tautomeria e spettri I.R. dell'acenaftenonaldeide", *Gazz. Chim. Ital.*, **94**, 526 (1964).
- 14- V. Balzani, V. Carassiti and L. Moggi: "Kinetics of the Acid Hydrolysis of Dicyanobis(2,2'-bipyridine)iron(III) and Dicyanobis(1,10-phenanthroline) Iron(III)", *Inorg. Chem.*, **3**, 1252 (1964).
- 15- V. Balzani, V. Carassiti, L. Moggi, F. Scandola: "Photochemistry of coordination compounds. XIII. Photochemical behaviour and electronic spectra of some  $d^8$  glycinate complexes", *Inorg. Chem.* **4**, 1243 (1965).
- 16- V. Balzani, V. Carassiti, L. Moggi and N. Sabbatini: "Photochemistry of Coordination Compounds. XIV. Electron Transfer and d-d Excitation in Cobalt(III)-Amino Acid Complexes", *Inorg. Chem.*, **4**, 1247 (1965).
- 17- V. Balzani: "Preparazione, proprietà e spettri i.r., v. ed u.v. dei complessi dell'acenaftenonaldeide-ione con Co(II), Ni(II), Cu(II), Zn(II) e Pd(II)", *Gazz. Chim. Ital.*, **95**, 1130 (1965).
- 18- V. Balzani and V. Carassiti: "Absorption Spectra and Photochemical Behaviour of Coordination Compounds", Omagiu Acad. Prof. R. Ripan, *Academii Republicii Socialiste Romania*, p. 111 (1966).
- 19- F. Scandola, V. Balzani and V. Carassiti: "Remarks on the Electronic Spectrum of Dibenzenechromium(I) Ion", *Inorg. Chem.*, **5**, 700 (1966).
- 20- L. Moggi, F. Bolletta, V. Balzani and F. Scandola: "Photochemistry of Coordination Compounds. XV. Cyanide Complexes", *Journal of Inorganic and Nuclear Chemistry*, **28**, 2589 (1966).
- 21- V. Balzani, V. Carassiti and F. Scandola: "Stati Elettronici nella fotochimica dei composti di coordinazione", *Gazz. Chim. Ital.*, **96**, 1213 (1966).
- 22- L. Moggi, F. Bolletta and V. Balzani: "Photochemical Reactions of  $\text{Cr}(\text{NH}_3)_5\text{Cl}^{2+}$ ", *Ricerca Scientifica*, **36**, 1228 (1966).

- 23- V. Balzani, F. Manfrin and L. Moggi: "Photochemistry of Coordination Compounds. XVI. Hexabromoplatinate(IV) and Hexaiodoplatinate(IV) Ions", *Inorg. Chem.*, **6**, 354 (1967).
- 24- L. Moggi, N. Sabbatini and V. Balzani: "Fotochimica dei composti di coordinazione. XVII. Ossidoriduzione ed acquazione simultanee in alcuni complessi del Co(III) per eccitazione di bande di trasferimento di carica", *Gazz. Chim. Ital.*, **97**, 980 (1967).
- 25- F. Scandola, O. Traverso, V. Balzani, G.L. Zucchini and V. Carassiti: "The Role of the Excited-state Geometry in the Photochemical Isomerization of Bis(glycinato)platinum(II)", *Inorg. Chim. Acta*, **1**, 76 (1967).
- 26- V. Balzani, L. Moggi, F. Scandola and V. Carassiti: "Photochemistry of Cobalt(III) Complexes", *Inorg. Chim. Acta (Reviews)*, **1**, 7 (1967).
- 27- V. Balzani and V. Carassiti: "Photochemistry of some Square Planar and Octahedral Platinum Complexes", *J. Phys. Chem.*, **72**, 383 (1968).
- 28- V. Balzani, L. Moggi and V. Carassiti: "Recent Aspects of the Photochemistry of Transition Metal Complexes", *Berichte der Bunsengesellschaft fuer Physikalische Chemie*, **72**, 288 (1968).
- 29- L. Moggi, V. Balzani and V. Carassiti: "Simultaneous Photoreactions in Co(III) Complexes", *Berichte der Bunsengesellschaft fuer Physikalische Chemie*, **72**, 293 (1968).
- 30- V. Balzani, R. Ballardini, N. Sabbatini and L. Moggi: "Photochemical Reactions of Nitropentamminecobalt (III) Ion", *Inorg. Chem.*, **7**, 1398 (1968).
- 31- V. Balzani, N. Sabbatini and V. Carassiti: "Thermal and Photochemical Behaviour of the linkage Isomers  $\text{Pt}(\text{NH}_3)_5\text{ONO}^{3+}$  and  $\text{Pt}(\text{NH}_3)_5\text{NO}_2^{3+}$ ", *Progress in Coordination Chemistry*, E. Cais ed., Elsevier, Amsterdam 1968, p. 80.
- 32- V. Balzani, M.F. Manfrin and L. Moggi: "Definitive Evidence of primary Photoaquation Reaction of the Octacyanomolybdate(IV) Complex Anion", *Inorg. Chem.*, **8**, 47 (1969).
- 33- R. Ballardini, M.T. Gandolfi and V. Balzani: "Reazioni fotochimiche in matrici di alogenuri alcalini", Atti del II Convegno Nazionale di Chimica Inorganica, Bressanone, Luglio 1969, p. 109.
- 34- O. Traverso, F. Scandola, V. Balzani and S. Valcher: "Photochemistry of the Dibenzenechromium(I) Ion in Aqueous Solution", *Molecular Photochemistry*, **1**, 289 (1969).

- 35- M.F. Manfrin, G. Varani, L. Moggi and V. Balzani: "Photochemistry of the Hexaamminecobalt(III) and Tris(ethylenediamine)-Cobalt(III) Ions", *Molecular Photochemistry*, **1**, 387 (1969).
- 36- C. Bartocci, F. Scandola and V. Balzani: "Mechanism of Photosubstitution Reactions of Square-Planar Platinum(II) Complexes. I. the Bromodiethylenetriamine-platinum(II)-Nitrite Ion System", *J. Am. Chem. Soc.*, **91**, 6948 (1969).
- 37- L. Moggi, G. Varani, M.F. Manfrin and V. Balzani: "Photochemical Reactions of Hexachloroiridate(IV) Ion", *Inorg. Chim. Acta*, **4**, 335 (1970).
- 38- V. Balzani and V. Carassiti: "**Photochemistry of Coordination Compounds**", Academic Press, London, 1970, p. 1- 432.
- 39- M.F. Manfrin, L. Moggi and V. Balzani: " Geometrical Configuration of the Product Obtained from Ammonia Photoaquation of Chloro-pentamminechromium(III) Ion", *Inorg. Chem.*, **10**, 207 (1971).
- 40- N. Sabbatini and V. Balzani: "Nitro- and Nitro-tetrammine-amidoplatinum(IV) Complex Ions", *Inorg. Chem.*, **10**, 209 (1971).
- 41- V. Balzani, R. Ballardini, M.T. Gandolfi, L. Moggi: "Sensitized photolysis and luminescence of the tris(ethylenediamine)chromium(III) ion in aqueous solution", *J. Chem. Soc.* **93**, 339 (1971).
- 42- L. Moggi, G. Varani, N. Sabbatini and V. Balzani: "Mechanism of Cis->trans Photoisomerization of Dichlorodipyridineplatinum(II)", *Molecular Photochemistry*, **3**, 141 (1971).
- 43- F. Bolletta, M. Gleria and V. Balzani: "Further Investigations on the Photochemical Behaviour of Cis- and trans-bis(glycinato)platinum(II)", *Molecular Photochemistry*, **4**, 205 (1972).
- 44- M.T. Gandolfi, M.F. Manfrin, L. Moggi and V. Balzani: "The Photochemical Behaviour of Trans-chloroisothiocyanato-bis(ethylenediamine) Chromium(III)", *J. Am. Chem. Soc.*, **94**, 7152 (1972).
- 45- N. Sabbatini and V. Balzani: "Photosensitized Aquation of the Hexacyanochromate(III) ion: Evidence against the Doublet Mechanism", *J. Am. Chem. Soc.*, **94**, 7587 (1972).
- 46- F. Bolletta, M. Gleria and V. Balzani: "Sensitization and Quenching of the Cis-trans Isomerization of Bis(glycinato)platinum(II)", *J. Phys. Chem.*, **76**, 3934 (1972).

- 47- L. Moggi and V. Balzani: "Highlights in the Literature: Photochemistry, Electronic Energy Transfer and Luminescence of Coordination Compounds, 1971", *Molecular Photochemistry*, **4**, 559 (1972).
- 48- V. Balzani and F. Bolletta: "Some Remarks on the Photochemical Utilization of Solar Energy", *Complex Bull.*, April 1973, p. 30.
- 49- V. Balzani, F. Bolletta, L. Moggi and M. Gleria: "Photochemical Conversion of Solar Energy: Criteria for the Design of Suitable Systems", Proceedings of the International Congress "The Sun in the Service of Mankind", Paris, 2-6 July 1973, p. E117.
- 50- V. Balzani: "Nuovi aspetti della fotochimica dei composti di coordinazione", *La Chimica e l'Industria*, **55**, 711 (1973).
- 51- M.F. Manfrin, M.T. Gandolfi, L. Moggi and V. Balzani: "Photochemistry of Mixed Ligand Cr(III) Complexes. Part II. Cis-Cr(en)<sub>2</sub>(NCS)Cl<sup>+</sup>", *Gazz. Chim. Ital.*, **103**, 1189 (1973).
- 52- F. Bolletta, M. Maestri, L. Moggi and V. Balzani: "Ligand and geometry Effects in the Quenching of Ru(dipy)<sub>3</sub><sup>2+</sup> Phosphorescence by some Cr(III) Complexes", *J. Am. Chem. Soc.*, **95**, 7864 (1973).
- 53- H.F. Wasgestian, R. Ballardini, G. Varani, L. Moggi and V. Balzani: "Quenching of the Cr(en)<sub>3</sub><sup>3+</sup> Phosphorescence by some Transition Metal Ions in Aqueous Solutions", *J. Phys. Chem.*, **77**, 2614 (1973).
- 54- R. Ballardini, G. Varani, H.F. Wasgestian, L. Moggi and V. Balzani: "The Role of the Excited States in the Photochemical and Photophysical Behaviour of Cr(en)<sub>3</sub><sup>3+</sup> in Aqueous Solutions", *J. Phys. Chem.*, **77**, 2947 (1973).
- 55- V. Balzani, F. Bolletta, L. Moggi and M. Gleria: "Trasformazione fotochimica dell'energia solare mediante sistemi non-biologici. Parte I. Considerazioni generali", *La Chimica e l'Industria*, **56**, 129 (1974).
- 56- V. Balzani, F. Bolletta, L. Moggi and M. Gleria: "Trasformazione fotochimica dell'energia solare mediante sistemi non-biologici. Parte II. Esame critico dei sistemi proposti", *La Chimica e l'Industria*, **56**, 201 (1974).
- 57- V. Balzani: "Il ruolo degli stati eccitati nella fotochimica dei composti di coordinazione", Atti dell'VIII Congresso dell'Associazione Italiana di Chimica Fisica, Salice Terme 1974, p. 55.

- 58- N. Sabbatini, F. Scandola and V. Balzani: "Intersystem Crossing Efficiency in the  $\text{Cr}(\text{CN})_6^{3-}$  Ion", *J. Phys. Chem.*, **78**, 541 (1974).
- 59- M.T. Gandolfi, M.F. Manfrin, A. Juris, L. Moggi and V. Balzani: "Photochemistry of Mixed Ligand Cr(III) Complexes. Part III.  $\text{Trans-Cr}(\text{en})_2(\text{NCS})\text{Cl}^{+}$ ", *Inorg. Chem.*, **13**, 1342 (1974).
- 60- F. Bolletta, M. Maestri, L. Moggi and V. Balzani: "Dynamic and Static Quenching of the  $\text{Ru}(\text{dipy})_3^{2+}$  Phosphorescence by Anionic Coordination Compounds in Various Solvent", *J. Phys. Chem.*, **78**, 1374 (1974).
- 61- G.S. Laurence and V. Balzani: "Reduction by the Triplet Charge Transfer Excited State of  $\text{Ru}(\text{dipy})_3^{2+}$ . Photochemical Reaction between  $\text{Ru}(\text{dipy})_3^{2+}$  and  $\text{Tl}(\text{III})$ ", *Inorg. Chem.*, **13**, 2976 (1974).
- 62- R. Ballardini, G. Varani, L. Moggi and V. Balzani: "Exciplexes of a Transition Metal Complex", *J. Am. Chem. Soc.*, **96**, 7123 (1974).
- 63- G.B. Porter, V. Balzani and L. Moggi: "Primary Processes and Energy Transfer: Consistent Terms and Definitions", *Advances in Photochemistry*, **9**, 147 (1974).
- 64- R. Ballardini, G. Varani, L. Moggi, V. Balzani, K.R. Olson, F. Scandola and M.Z. Hoffman: "Photochemical and Photophysical Behaviour of Dichloro Complexes of Ir(III) Containing Phenanthroline Ligands", *J. Am. Chem. Soc.*, **97**, 728 (1975).
- 65- V. Balzani, L. Moggi, M.F. Manfrin, F. Bolletta and G.S. Laurence: "Quenching and Sensitization processes of Coordination Compounds", *Coord. Chem. Rev.*, **15**, 321 (1975).
- 66- V. Balzani, L. Moggi, M.F. Manfrin, F. Bolletta, M. Gleria: "Solar energy conversion by water photodissociation", *Science* **189**, 852 (1975).
- 67- V. Balzani, L. Moggi, F. Bolletta and M.F. Manfrin: "The Use of Quenching and Sensitization Techniques for the Study of Excited State Properties of Transition Metal Complexes", *Advances in Chemical Series*, **150**, 160 (1976).
- 68- F. Bolletta, M. Maestri, L. Moggi and V. Balzani: "Bimolecular Electron Transfer Reactions of Electronically Excited States of Coordination Compounds", *J. Chem. Soc. Chem. Commun.*, 901 (1975).
- 69- A. Juris, M.T. Gandolfi, M.F. Manfrin and V. Balzani: "Electron and Energy Transfer Mechanisms in the Quenching of the  $\text{Tris}(2,2'\text{-bipyridine})\text{Ruthenium}(\text{II})$  Luminescence by Cyanide Complexes", *J. Am. Chem. Soc.*, **98**, 1047 (1976).
- 70- R. Bensasson, C. Salet and V. Balzani: "Laser Flash Spectroscopy of  $\text{Tris}(2,2'\text{-bipyridine})\text{Ruthenium}(\text{II})$  in Solution", *J. Am. Chem. Soc.*, **98**, 3722 (1976).

- 71- M. Maestri, F. Bolletta, N. Serpone, L. Moggi and V. Balzani: "Kinetics of Ligand Substitution of Tris(2,2'-bipyridine)Chromium(II) in Aqueous Solution", *Inorg. Chem.*, **15**, 2048 (1976).
- 72- F. Bolletta, M. Maestri and V. Balzani: "Efficiency of the Intersystem Crossing from the Lowest Spin-allowed to the Lowest Spin-forbidden Excited State of Some Cr(III) and Ru(II) Complexes", *J. Phys. Chem.*, **80**, 2499 (1976).
- 73- R. Ballardini, G. Varani, F. Scandola and V. Balzani: "Bimolecular Electron Transfer Processes of Electronically Excited Tris(2,2'-bipyridine)Chromium(III)", *J. Am. Chem. Soc.*, **98**, 7432 (1976).
- 74- D. Sandrini, M.T. Gandolfi, A. Juris and V. Balzani: "Hydroxide Ion as a 'Non-Innocent' Quencher of the Photoaquation Reaction of Cr(III) Complexes", *J. Am. Chem. Soc.*, **99**, 4523 (1977).
- 75- M. Maestri, F. Bolletta, L. Moggi V. Balzani, M.S. Henry and M.Z. Hoffman: "Photochemistry and Photophysics of Tris(2,2'-bipyridine)Chromium(III)", *J. Chem. Soc. Chem. Commun.*, 491 (1977).
- 76- R. Ballardini, G. Varani, L. Moggi and V. Balzani: "Reexamination of the Photophysical Behaviour of Complexes of Ir(III) containing Phenanthroline Ligands", *J. Am. Chem. Soc.*, **99**, 6881 (1977).
- 77- D. Sandrini, M.T. Gandolfi, L. Moggi and V. Balzani: "Photochemical and Photophysical Behaviour of Trans-Cr(en)<sub>2</sub>(NCS)<sub>2</sub><sup>+</sup>", *J. Am. Chem. Soc.*, **100**, 1463 (1978).
- 78- M. Maestri, F. Bolletta, L. Moggi V. Balzani, M.S. Henry and M.Z. Hoffman: "Mechanism of the Photochemistry and Photophysics of the Cr(bpy)<sub>3</sub><sup>3+</sup> Ion in Aqueous Solution", *J. Am. Chem. Soc.*, **100**, 2694 (1978).
- 79- V. Balzani, F. Bolletta and L. Moggi: "Energy and Electron Transfer in the Field of Transition Metal Complexes", *Spectroscopy Letters*, **11**, 525 (1978).
- 80- R. Ballardini, G. Varani, M.T. Indelli, F. Scandola and V. Balzani: "Free Energy Correlation of Rate Constants for Electron Transfer Quenching of Excited Transition Metal Complexes", *J. Am. Chem. Soc.*, **100**, 7219 (1978).
- 81- V. Balzani, F. Bolletta, M.T. Gandolfi and M. Maestri: "Bimolecular Electron Transfer Reactions of Excited States of Transition Metal Complexes", *Topics in Current Chemistry*, **75**, 1 (1978).

- 82- V. Balzani and F. Bolletta: "Energy Transfer Processes Involving Distorted Excited States", *J. Am. Chem. Soc.*, **100**, 7404 (1978).
- 83- V. Balzani, F. Bolletta, F. Scandola and R. Ballardini: "Excited States Electron - Transfer Reactions of Transition Metal Complexes", *Pure and Applied Chemistry*, **51**, 299 (1979).
- 84- R. Bensasson, C. Salet and V. Balzani: "Spectre d'absorption et rendement quantique de formation du premier etat excite triplet du ruthenium(II) tris(2,2'-bipyridine) en solution aqueus", *C.R. Acad. Sc. Paris*, **289B**, 41 (1979).
- 85- V. Balzani: "Fotochimica, una nuova dimensione della chimica", *La Chimica e l'Industria*, **61**, 727 (1979).
- 86- F. Scandola and V. Balzani: "Free Energy Relationships for Electron Transfer Processes", *J. Am. Chem. Soc.*, **101**, 6140 (1979).
- 87- R. Ballardini, G. Varani and V. Balzani: "Energy and Electron Transfer Processes of the Lowest Excited State of the Tris(phenanthroline)Rhodium(III) Complex", *J. Am. Chem. Soc.*, **102**, 1719 (1980).
- 88- V. Balzani, F. Bolletta, F. Scandola: "Vertical and non-vertical energy transfer processes. A general classical treatment", *J. Am. Chem. Soc.* **102**, 2152 (1980).
- 89- V. Balzani, M.T. Indelli, M. Maestri, D. Sandrini and F. Scandola: "On the Rate Constants of Electronic Energy Transfer from Aromatic Triplets to Chromium(III) Complexes: the Role of the Pre-exponential Factor", *J. Phys. Chem.*, **84**, 852 (1980).
- 90- V. Balzani: "Photochemistry and the Development of Alternative Energies", in *Alternative Energy and the Offer of the Sun and the Sea*, Ente Autonomo Fiera di Milano 1980, p. 245.
- 91- R. Ballardini, A. Juris, G. Varani and V. Balzani: "Hydrogen Evolution from Water by Visible Light Excitation of Polypyridine Chromium(III) Complexes", *Nouveau Journal de Chimie*, **4**, 563 (1980).
- 92- G. Orlandi, S. Monti, F. Barigelletti and V. Balzani: "Triplet Energy Transfer to Cis and Trans Stilbene. A Quantum Mechanical Approach", *Chemical Physics*, **52**, 313 (1980).
- 93- V. Balzani, F. Scandola, G. Orlandi, N. Sabbatini and M.T. Indelli: "The Non-adiabaticity Problem of Outer-sphere Electron-transfer Reactions. Reduction and Oxidation of Europium Ions", *J. Am. Chem. Soc.*, **103**, 3370 (1981).



- 94- V. Balzani and F. Scandola: "Photochemical Electron Transfer Reactions in Homogeneous Solutions", in *Photochemical and Storage of Solar Energy*, J.S. Connolly Editor, Academic Press, New York 1981, p. 97-129.
- 95- F. Bolletta, A. Rossi and V. Balzani: "Chemiluminescence on Oxidation of Tris(2,2'-bipyridine)chromium(II): Chemical Generation of Metal-centered Excited State", *Inorg. Chim. Acta*, **L23**, 53 (1981).
- 96- F. Bolletta, A. Rossi, F. Barigelletti, S. Dellonte and V. Balzani: "Phosphorescence Emission from Ligand Centered Excited States in the Tris-phenanthroline Rhodium(III) Complex", *Gazz. Chim. Ital.*, **111**, 155 (1981).
- 97- F. Scandola, V. Balzani and G.B.Schuster: "Free-energy Relationship for Reversible and Irreversible Electron Transfer Processes", *J. Am. Chem. Soc.*, **103**, 2519 (1981).
- 98- V. Balzani and F. Bolletta: "Chemiluminescence from Electron Transfer Reactions of Transition Metal Complexes", *Journal of Photochemistry*, **17**, 479 (1981).
- 99- A. Juris, V. Balzani, P. Belser and A. Von Zelewsky: "Characterization of the Excited State Properties of Some New Photosensitizers of the Ruthenium(polypyridine) Family", *Helvetica Chimica Acta*, **64**, 2175 (1981).
- 100- N. Sabbatini, M.T. Indelli, M.T. Gandolfi and V. Balzani: "Quenching of Singlet and Triplet Excited States of Aromatic Molecules by Europium Ions", *J. Phys. Chem.*, **86**, 3585 (1982).
- 101- A. Juris, F. Barigelletti, V. Balzani, P. Belser and A. Von Zelewsky: "New Photosensitizers of the Ruthenium-polypyridine Family for the Water Splitting Reaction", *Israel Journal of Chemistry*, **22**, 87 (1982).
- 102- F. Bolletta, M. Ciano, V. Balzani and N. Serpone: "Polypyridine Transition Metal Complexes as Light Emission Sensitizers in the Electrochemical Reduction of the Persulfate Ion", *Inorg. Chim. Acta*, **62**, 207 (1982).
- 103- F. Bolletta, V. Balzani: "Oscillating chemiluminescence from the reduction of bromate by malonic acid catalyzed by tris(2,2'-bipyridine)ruthenium(II)", *J. Am. Chem. Soc.* **104**, 4250 (1982). **Highlight: La Recherche**, **1982**, November, 1310.
- 104- P. Belser, A. Von Zelewsky, A. Juris, F. Barigelletti, A. Tucci and V. Balzani: "Ligand-centered Luminescence from a Ruthenium(II) Complex", *Chemical Physics Letters*, **89**, 101 (1982).

- 105- N. Sabbatini, M. Ciano, S. Dellonte, A. Bonazzi and V. Balzani: "Absorption and Emission Properties of Europium(II) Cryptate in Aqueous Solution", *Chemical Physics Letters*, **90**, 265 (1982).
- 106- V. Balzani, F. Bolletta, M. Ciano and M. Maestri: "Electron Transfer Reactions Involving Light", *Journal of Chemical Education*, **60**, 447 (1983).
- 107- V. Balzani and F. Scandola: "Light Induced and Thermal Electron Transfer Reactions" in *Energy Resources through Photochemistry and Catalysis*, M. Graetzel Editor, Academic Press, New York 1983, p. 1.
- 108- V. Balzani: "Photochemie: Eine neue Dimension in der Chemie", *Die Umschau*, **19**, 564 (1983).
- 109- M.A. Rampi Scandola, F. Scandola, A. Indelli and V. Balzani: "Cobalt(III) Sepulchrate: a New Relay for Water Splitting Photochemical Cycles", *Inorg. Chim. Acta Letters*, **L67**, 76 (1983).
- 110- V. Balzani and F. Bolletta: "Transition Metal Complexes as Mediators in Photochemical and Chemiluminescence Reactions", *Comments Inorg. Chem.*, **2**, 211 (1983).
- 111- P. Belser, A. Von Zelewsky, A. Juris, F. Barigelletti and V. Balzani: "Luminescence of Ru(diimine)<sub>2</sub>Cl<sub>2</sub> Complexes", *Gazz. Chim. Ital.*, **113**, 731 (1983).
- 112- M.T. Gandolfi, M. Maestri, D. Sandrini and V. Balzani: "Role of the Electronic Energy Transfer from the <sup>2</sup>E<sub>g</sub> Excited State of Tris(2,2'-bipyridine)chromium(III) to Cobalt(III) Complexes", *Inorg. Chem.*, **22**, 3435 (1983).
- 113- F. Barigelletti, A. Juris, P. Belser, V. Balzani and A. Von Zelewsky: "Excited State Properties of Complexes of the Ru(diimine)<sub>3</sub><sup>2+</sup>Family", *Inorg. Chem.*, **22**, 3335 (1983).
- 114- F. Scandola and V. Balzani: "Energy Transfer Processes of Excited States of Coordination Compounds", *J. Chem. Educ.*, **60**, 814 (1983).
- 115- R. Ballardini, Q.G. Mulazzani, M. Venturi, F. Bolletta and V. Balzani: "Photophysical Characterization of the Europium Decatungstate Anion", *Inorg. Chem.*, **23**, 300 (1984).
- 116- N. Sabbatini, M. Ciano, S. Dellonte, A. Bonazzi, F. Bolletta and V. Balzani: "Photophysical Properties of Europium(III) Cryptates", *J. Phys. Chem.*, **88**, 1534 (1984).

- 117- N. Sabbatini, S. Dellonte, M. Ciano, A. Bonazzi and V. Balzani: "Spectroscopic and Photophysical Properties of the [Eu<sup>3+</sup>(2.2.1)] Cryptate", *Chem. Phys. Letts*, **107**, 212 (1984).
- 118- D. Sandrini, M.T. Gandolfi, M. Maestri, F. Bolletta and V. Balzani: "Electron Transfer Quenching of the Luminescence of Ruthenium and Osmium Polypyridine Complexes by Cobalt(III) Complexes", *Inorg. Chem.*, **23**, 3017 (1984).
- 119- P. Belser, A. von Zelewsky, A. Juris, F. Barigelletti and V. Balzani: "Luminescence of Mixed-Ligand Ruthenium(II) Chelates. Is There Any Bona Fide Case of Dual Emission?", *Chem. Phys. Letts*, **104**, 100 (1984).
- 120- Q.G. Mulazzani, M. Venturi, R. Ballardini, M.T. Gandolfi and V. Balzani: "Pulse and Continuous Radiolysis of the Europium and Neodymium Decatungstate Anions in Aquous Solution", *Israel Journal of Chemistry*, **25**, 183 (1985).
- 121- M.T. Manfrin, N. Sabbatini, L. Moggi, V. Balzani, M.W. Hosseini and J.M. Lehn: "Photochemistry of the Supercomplex Obtained on Complexation of the Hexacyanocobaltate(III) Anion by a Polyammonium Macrocyclic Receptor", *J. Chem. Soc. Chem. Commun.*, 555 (1984).
- 122- A. Juris, F. Barigelletti, V. Balzani, P. Belser and A. Von Zelewsky: "Luminescence of Ruthenium(II) Tris Chelate Complexes Containing the Ligands 2,2'-bipyridine and 2,2'-isodiquinoline. Behavior of the Ru(bpy)<sub>2</sub><sup>2+</sup> and Ru(bpy)<sub>2</sub><sup>2+</sup> Emitting Units", *Inorg. Chem.*, **24**, 202 (1985).
- 123- N. Sabbatini, A. Bonazzi, M. Ciano and V. Balzani: "Electron Transfer Quenching and Outer-Sphere Charge-transfer Transitions in Mixed-Ligand Ion Pairs. The [Eu<sup>3+</sup>(2.2.1)]-M(CN)<sub>6</sub><sup>4-</sup> Systems", *J. Am. Chem. Soc.*, **106**, 4055 (1984).
- 124- M. Maestri, D. Sandrini, V. Balzani, P. Belser and A. von Zelewsky: "Rates of Virtually Self-Exchange Energy Transfer Processes of Ruthenium(II) Polypyridine Complexes", *Chemical Physics Letters*, **110**, 611 (1984).
- 125- R. Ballardini, E. Chiorboli and V. Balzani: "Photophysical Properties of Eu(SiW<sub>11</sub>O<sub>39</sub>)<sub>2</sub><sup>13-</sup> and Eu(BW<sub>11</sub>O<sub>39</sub>)<sup>15-</sup>", *Inorg. Chim. Acta*, **95**, 323 (1984).
- 126- V. Balzani, A. Juris, F. Barigelletti, P. Belser and A. Von Zelewsky: "Photophysical Properties of Ruthenium(II) Polypyridine Complexes", *Riken Quarterly*, **78**, 78 (1984).
- 127- F. Pina, M. Ciano, Q.G. Mulazzani, M. Venturi, V. Balzani and L. Moggi: "Photochemistry and Photophysics of Ion Pairs Involving the Co(sepulchrate)<sup>3+</sup> Complex", *Riken Quarterly*, **78**, 166 (1984).

- 128- F. Bolletta, Q.G. Mulazzani, M. Venturi, N. Serpone and V. Balzani: "Chemiluminescence During the Dissolution of  $\gamma$ -irradiated NaCl in Aqueous Solutions Containing Ru(bpy)<sub>3</sub><sup>2+</sup>", *Gazz. Chim. Ital.*, **115**, 137 (1985).
- 129- F. Pina, M. Ciano, L. Moggi and V. Balzani: "Electron Transfer Sensitization via Ion-Pairs. The Co(sepulchrate)<sup>3+</sup>-Iodide Ion System", *Inorg. Chem.*, **24**, 844 (1985).
- 130- F. Pina, Q.G. Mulazzani, M. Venturi, M. Ciano and V. Balzani: "Photochemistry of Co(sep)<sup>3+</sup>-Oxalate Ion-Pairs: a Novel System for Dihydrogen Evolution from Aqueous Solutions", *Inorg. Chem.*, **24**, 848 (1985).
- 131- D. Sandrini, M. Maestri, P. Belser, A. Von Zelewsky and V. Balzani: "Kinetics Parameters for Electron Transfer Quenching of the Luminescent Excited State of Ru(III)-polypyridine Complexes by Aromatic Amines in Acetonitrile Solutions", *J. Phys. Chem.*, **89**, 3675 (1985).
- 132- F. Barigelletti, P. Belser, A. Von Zelewsky, A. Juris and V. Balzani: "Luminescence of Mixed-Ligand Polypyridine Ruthenium(II) Complexes in the Temperature Range 84-250 K. Interligand Interaction and Viscosity Effects on Radiationless Processes", *J. Phys. Chem.*, **89**, 3680 (1985).
- 133- N. Sabbatini and V. Balzani: "Photoinduced Electron Transfer Processes Involving Europium Cryptates", *Journal of Less Common Metals*, **112**, 381 (1985).
- 134- N. Sabbatini, S. Dellonte, A. Bonazzi, M. Ciano and V. Balzani: "Photoinduced Electron Transfer Reactions of Poly(pyridine) Ruthenium(II) Complexes with Europium(III/II) Cryptates", *Inorg. Chem.*, **25**, 1738 (1986).
- 135- R. Ballardini, M.T. Gandolfi and V. Balzani: "Photoinduced Electron Transfer within Ion Pairs. Direct Measure of the Intramolecular Electron Transfer Quenching Constants", *Chemical Physics Letters*, **119**, 453 (1985).
- 136- M.F. Manfrin, L. Moggi, V. Castelvetro, V. Balzani, M.W. Hosseini, J.M. Lehn: "Control of the photochemical reactivity of coordination compounds by formation of supramolecular structures: the case of the hexacyanocobaltate(III) anion associated with polyammonium macrocyclic receptors", *J. Am. Chem. Soc.* **107**, 6888 (1985).
- 137- A. Juris, P. Belser, F. Barigelletti, A. Von Zelewsky and V. Balzani: "Excited State properties of Ruthenium(II) Tris Chelate Complexes Containing the Ligands 2,2'-Bipyridine (bpy) and Dipyrido [3,2-c: 2',3-e] Pyridazine (taphen)", *Inorg. Chem.*, **25**, 256 (1986).

- 138- Q.G. Mulazzani, M. Venturi, F. Bolletta and V. Balzani: "Radiolytically Induced Outer-Sphere Oxidation of Ru(bpy)<sub>3</sub><sup>2+</sup> in LiCl-H<sub>2</sub>O Solutions", *Inorg. Chim. Acta*, **113**, L1 (1986).
- 139- V. Balzani, N. Sabbatini, F. Scandola: "Second-sphere photochemistry and photophysics of coordination compounds", *Chem. Rev.* **86**, 319 (1986).
- 140- P. Belser, A. Von Zelewsky, A. Juris, F. Barigelletti and V. Balzani: "Excited State Properties of Some new Ruthenium(II) Cyano-polypyridine Complexes in Various Solvents", *Gazz. Chim. Ital.*, **115**, 723 (1985).
- 141- M. Maestri, D. Sandrini, V. Balzani, L. Chassot, P. Jolliet and A. Von Zelewsky: "Luminescence of Ortho-Metallated Platinum(II) Complexes", *Chem. Phys. Letts*, **122**, 375 (1985).
- 142- F. Barigelletti, A. Juris, V. Balzani, P. Belser and A. Von Zelewsky: "Temperature Dependence of the Luminescence Emission of Ruthenium(II) Complexes Containing the Ligands 2,2'-Bipyridine and Dipyrido [3,2-c: 2',3-e] Pyridazine", *J. Phys. Chem.*, **90**, 5190 (1986).
- 143- V. Balzani, A. Juris and F. Scandola: "Photoinduced Charge Separation: Requirements Needed for Ideal Relays and Photosensitizers", in *Homogeneous and Heterogeneous Photocatalysis*, E. Pelizzetti and N. Serpone, Eds., Reidel (Dordrecht), 1986, p. 1-27.
- 144- F. Scandola, C.A. Bignozzi and V. Balzani: "Photoinduced Charge Separation: Towards the Design of Supramolecular Systems Based on Transition Metal Complexes", in *Homogeneous and Heterogeneous Photocatalysis*, E. Pelizzetti and N. Serpone, Eds., Reidel (Dordrecht), 1986, p. 29-49.
- 145- S. Bonafede, M. Ciano, F. Bolletta, V. Balzani, L. Chassot and A. Von Zelewsky: "Electrogenerated Chemiluminescence of an Ortho-Metallated Platinum(II) Complex", *J. Phys. Chem.*, **90**, 3836 (1986).
- 146- V. Balzani and F. Scandola: "Concerning the Nonadiabaticity problem in Outer-sphere Electron and Energy Transfer Reactions", *Inorg. Chem.*, **25**, 4457 (1986).
- 147- N. Sabbatini, S. Perathoner, S. Dellonte, G. Lattanzi and V. Balzani: "Electron and Energy Transfer Processes of Excited States of Eu(III) and Tb(III) Aquo Ions and Cryptates", *Journal Less-Common Metals*, **126**, 329 (1986).
- 148- F. Pina, R. Ballardini, Q. G. Mulazzani, M. D'Angelantonio, and V. Balzani: "Flash Photolysis and Pulse Radiolysis of the Co(sepulchrates)<sup>3+</sup>-X<sup>-</sup> (X = I, Br) System in Aqueous Solution", *Inorg. Chem.*, **25**, 4249 (1986).

- 149- R. Ballardini, M.T. Gandolfi, and V. Balzani: "Dynamic and Static Quenching of the Luminescence of Ru(II) Polypyridine Complexes by Heteropolytungstate Anions. Direct Measurements of Intramolecular Electron Transfer Rate Constants", *Inorg. Chem.*, **26**, 862 (1987).
- 150- L. Chassot, A. von Zelewsky, D. Sandrini, M. Maestri, and V. Balzani: "Photochemical Preparation of Luminescent Pt(IV) Complexes via Oxidative Addition on Luminescent Pt(II) complexes", *J. Am. Chem. Soc.*, **108**, 6084 (1986).
- 151- F. Barigelletti, A. Juris, V. Balzani, P. Belser, and A. von Zelewsky: "Temperature Dependence of the Ru(bpy)<sub>2</sub>(CN)<sub>2</sub> and Ru(bpy)<sub>2</sub>(i-biq)<sup>2+</sup> Luminescence", *J. Phys. Chem.*, **91**, 1095 (1987).
- 152- M. Maestri, D. Sandrini, V. Balzani, U. Maeder, and A. von Zelewsky: "Absorption Spectra, Electrochemical, Behaviour, Luminescence Spectra, and Excited State Lifetimes of Mixed Ligand Orthometallated Rh(III) Complexes", *Inorg. Chem.*, **26**, 1323 (1987).
- 153- R. Ballardini, M.T. Gandolfi, V. Balzani, and F. Scandola: "Ionic Strength Dependence of Diffusion and Association Constants Obtained from Luminescence Quenching Experiments. Evidence for Collapse of the Encounter into a Compenetrated Ion-Pair", *Gazz. Chim. Ital.*, **117**, 769 (1987).
- 154- D. Sandrini, M. Maestri, V. Balzani, L. Chassot, A. von Zelewsky: "Photochemistry of the orthometallated *cis*-bis-(2-(2-thienyl)pyridine)-platinum(II) complex in halocarbon solvents", *J. Am. Chem. Soc.* **109**, 7720 (1987).
- 155- N. Sabbatini, S. Perathoner, G. Lattanzi, S. Dellonte, and V. Balzani: "The Influence of Fluoride Ions on the Absorption and Luminescence Properties of the [Eu(2.2.1)]<sup>3+</sup> Cryptates", *J. Phys. Chem.*, **91**, 6136 (1987).
- 156- F. Barigelletti, A. Juris, V. Balzani, P. Belser, and A. von Zelewsky: "Influence of the Ligand Structure on the Electrochemical and Spectroscopic Properties of Ru(II)-polypyridine Complexes", *Inorg. Chem.*, **26**, 4115 (1987).
- 157- A. Juris, V. Balzani, F. Barigelletti, S. Campagna, P. Belser, and A. von Zelewsky: "Ru(II)-polypyridine Complexes: Photophysics, Photochemistry, Electrochemistry, Chemiluminescence", *Coord. Chem. Rev.*, **84**, 85 (1988).
- 158- V. Balzani, M. Maestri, A. Melandri, D. Sandrini, L. Chassot, C. Cornioley-Deuschel, P. Jolliet, U. Maeder, and A. von Zelewsky: "On the Orbital Nature of the Luminescent Excited State of Orthometallated Transition Metal Complexes", in

- Photochemistry and Photophysics of Coordination Compounds*, H. Yersin and A. Vogler Eds., Springer Verlag, Berlin, 1987, p. 72.
- 159- F. Barigelletti, A. Juris, V. Balzani, P. Belser, and A. von Zelewsky: "Correlations between Optical and Electrochemical Properties of Ru(II)-polypyridine Complexes: Influence of the Ligand Structure", in *Photochemistry and Photophysics of Coordination Compounds*, H. Yersin and A. Vogler Eds., Springer Verlag, Berlin, 1987, p. 78.
- 160- R. Ballardini, M. T. Gandolfi, and V. Balzani: "Biphotonic Effects in the Luminescence of Ru(II) Polypyridine Complex Cations Associate with Polytungstate Anions", *J. Phys. Chem.*, **92**, 56 (1988).
- 161- V. Balzani, L. Moggi, and F. Scandola: "Towards a supramolecular photochemistry. Assembly of molecular components to obtain photochemical molecular devices", in *Supramolecular Photochemistry*, V. Balzani ed., Reidel, Dordrecht, 1987, p. 1-28.
- 162- N. Sabbatini, S. Perathoner, V. Balzani, B. Alpha, and J. M. Lehn: "Antenna Effect in Eu<sup>3+</sup> and Tb<sup>3+</sup> Cryptates", in *Supramolecular Photochemistry*, V. Balzani ed., Reidel, Dordrecht, 1987, p. 187-206.
- 162bis- V. Balzani, Ed. "*Supramolecular Photochemistry*" Reidel, Dordrecht, 1987.
- 163- B. Alpha, V. Balzani, J. M. Lehn, S. Perathoner, and N. Sabbatini: "Luminescence Probes: The Eu<sup>3+</sup> and Tb<sup>3+</sup> Cryptates of Polypyridine Macrobicyclic Ligands", *Angewandte Chemie Int. Ed. Engl.*, **26**, 1266 (1987). **Highlight: Chemistry and Industry**, **1987**, August 17, 571.
- 164- A. Juris, F. Barigelletti, V. Balzani, P. Belser, and A. von Zelewsky: "Photophysical Properties of Ru-cyano-polypyridine Complexes: Acidity and Temperature Tuning of Luminescence Properties", *J. Chem. Soc. Faraday Transactions 2*, **83**, 2295 (1987).
- 165- F. Bolletta, L. De Cola, M. Ciano, and V. Balzani: "Photochemistry with or without Light. Ligand Substitution Reactions of Ru(II) Polypyridine Complexes via Excited States Generated by Light Absorption or by Electron Transfer Processes", *Gazz. Chim. Ital.*, **118**, 327 (1988).
- 166- V. Balzani and F. Scandola: "Photoinduced Electron Transfer in Coordination Compounds: Ion-Pairs and Supramolecular System", in *Photoinduced Electron Transfer*, M.A. Fox and M. Chanon, Eds., Elsevier, Amsterdam, Part D, p. 148-178, 1988.

- 167- D. Sandrini, M. Maestri, V. Balzani, U. Maeder, and A. von Zelewsky: "Spectroscopic and Electrochemical Properties of New Mixed-Ligand Orthometalated Rh(III) Complexes", *Inorg. Chem.*, **27**, 2640 (1988).
- 168- A. Juris and V. Balzani: "Recent Trends in the Search for New Photosensitizers", in *Photocatalytic Production of Energy-rich Compounds*, D.O. Hall and G. Grassi, Eds., Elsevier, London, p. 115-121, (1988).
- 169- N. Sabbatini, S. Perathoner, G. Lattanzi, S. Dellonte, and V. Balzani: "Electron and Energy Transfer Processes Involving Excited States of Lanthanide Complexes: Evidence for Inner-Sphere and Outer-Sphere Mechanisms", *Inorg. Chem.*, **27**, 1628 (1988).
- 170- M. Maestri, D. Sandrini, V. Balzani, A. von Zelewsky, and P. Jolliet: "Spectroscopic and Electrochemical Behavior of Orthometalated Pd(II) Complexes", *Helvetica Chimica Acta*, **71**, 134 (1988).
- 171- R. Ballardini, M. T. Gandolfi, V. Balzani, F. H. Kohnke, and F. J. Stoddart: "Second-Sphere Photochemistry and Photophysics: Luminescence of the [Pt(bpy)(NH<sub>3</sub>)<sub>2</sub>]<sup>2+</sup>-Dibenzo[30]crown-10 Adduct", *Angew. Chem. Int. Ed. Engl.*, **27**, 692 (1988). **Highlight:** *Chemistry and Industry*, **1989**, January 16, 43.
- 172- F. Barigelletti, D. Sandrini, M. Maestri, V. Balzani, A. von Zelewsky, L. Chassot, P. Jolliet, and U. Maeder: "Temperature Dependence of the Luminescence of Cyclometalated Pd(II), Rh(III), Pt(II), and Pt(IV) Complexes", *Inorg. Chem.*, **27**, 3644 (1988).
- 173- A. Juris, S. Campagna, V. Balzani, G. Gremaud, and A. von Zelewsky: "Absorption Spectra, Luminescence Properties, and Electrochemical Behavior of Tris-Heteroleptic Ruthenium(II) Polypyridine Complexes", *Inorg. Chem.*, **27**, 3652 (1988).
- 174- V. Balzani: "A Glance at Past, Present, and Future", *Newsletter of the European Photochemistry Association*, **34**, 4 (1988).
- 175- D. Sandrini, M. Maestri, M. Ciano, V. Balzani, P. Lueoennd, C. Deuschel-Cornioley, L. Chassot, and A. von Zelewsky: "Absorption Spectra, Luminescent Properties, and Electrochemical Behavior of Two New Cyclometalated Platinum(II) Complexes", *Gazz. Chim. Ital.* **118**, 661 (1988).
- 176- V. Balzani: "Towards a Supramolecular Photochemistry": *J. Photochem. Photobiol., B: Biology*, **2**, 138 (1988).



- 177- L. De Cola, F. Barigelletti, V. Balzani, P. Belser, A. von Zelewsky, F. Vogtle, F. Ebmeyer, and S. Grammenudi: "Ruthenium(II)-Polypyridine Cage Complexes: Luminescence and Photochemical Properties", *J. Am. Chem. Soc.*, **110**, 7210 (1988).  
**Highlight:** *Chemistry and Industry*, **1989**, January 16, 43.
- 178- M. Maestri, D. Sandrini, V. Balzani, A. von Zelewsky, C. Deuschel-Cornioley, and P. Jolliet: "Absorption Spectra and Luminescence Properties of Isomeric Platinum(II) and Palladium(II) Complexes Containing 2,2'-Biphenylidyl, 2,2'-Phenylpyridine, and 2,2'-Bipyridine as Ligands", *Helvetica Chimica Acta*, **71**, 1053 (1988).
- 179- V. Balzani and N. Sabbatini: "Photochemistry and Luminescence of Host-Guest Molecular Systems", in *Macrocyclic and Supramolecular Chemistry in Italy*, G.D. Andreetti, A. Pochini, and R. Ungaro eds., University Press. Parma (Italy), 1988, p. 13.
- 180- V. Balzani: "Tailoring Luminescent Compounds and Photosensitizers: Cage-type Metal Complexes", *Gazz. Chim. Ital.*, **119**, 311 (1989).
- 181- V. Balzani: "Recent Trends in Supramolecular Photochemistry", *J. Infor. Recor. Mater.*, **17**, 339 (1989).
- 182- F. Barigelletti, L. De Cola, V. Balzani, P. Belser, A. von Zelewsky, F. Vogtle, F. Ebmeyer, and S. Grammenudi: "Caged and Uncaged Ruthenium(II)-polypyridine Complexes: A Comparative Study the Photochemical, Photophysical, and Electrochemical Properties", *J. Am. Chem. Soc.*, **111**, 4662 (1989).
- 183- F. Pina, L. Moggi, M. F. Manfrin, V. Balzani, M. W. Hosseini, and J. M. Lehn: "Photochemistry of Supramolecular Systems. Size and Charge Effects in the Photoaquation of Adducts of the Hexacyanocobaltate(III) Anion with Polyammonium Macrocyclic Receptors", *Gazz. Chim. Ital.*, **119**, 56 (1989).
- 184- S. Campagna, G. Denti, G. De Rosa, G. Sabatino, M. Ciano, and V. Balzani: "Syntheses, Absorption Spectra, Luminescence Properties, and Electrochemical Behavior of Mono- and Bi-nuclear Ruthenium(II) Complexes of Isomeric Bis(2-Pyridyl)pyrazine", *Inorg. Chem.*, **28**, 2565 (1989).
- 185- F. Scandola, and V. Balzani: "Interaction between Light and Matter", in *Photocatalysis*, N. Serpone and E. Pelizzetti, Eds., Wiley, New York, N.Y., 1989, p. 9-44.
- 186- R. Ballardini, M. T. Gandolfi, L. Prodi, M. Ciano, V. Balzani, F. Kohnke, H. Shariari-Zavariah, N. Spencer, and J. F. Stoddart: "Supramolecular Photophysics.

- Adducts of  $\text{Pt}(\text{bpy})(\text{NH}_3)_2^{2+}$  with Aromatic Crown Ethers", *J. Am. Chem. Soc.*, **111**, 7072 (1989).
- 187- F. Barigelletti, L. De Cola, V. Balzani, R. Hage, J. G. Haasnot, J. Reedijk, J. G. Vos: "Photophysical, Photochemical, and Electrochemical Properties of Mononuclear and Dinuclear Ruthenium(II) Complexes Containing 2,2'-Bipyridine and the 3,5-Bis(pyridin-2-yl)-1,2,4-triazolate Ion", *Inorg. Chem.*, **28**, 4344 (1989).
- 188- S. Campagna, G. Denti, L. Sabatino, S. Serroni, M. Ciano, and V. Balzani: "A New Hetero-tetrametallic Complex of Ruthenium and Osmium: Absorption Spectrum, Luminescence Properties, and Electrochemical Behaviour", *J. Chem. Soc. Chem. Commun.*, 1500 (1989).
- 189- F. Barigelletti, L. De Cola, V. Balzani, P. Belser, A. von Zelewsky, F. Ebmeyer, and F. Voegtle: "Ru(II)-polypyridine Complexes as Photosensitizers and/or Building Blocks for the Design of Molecular Devices", in *Photoconversion Processes for Energy and Chemicals*, D. O. Hall and G. Grassi eds., Elsevier Applied Science Publisher, London, 1989, p. 46-52.
- 190- S. Campagna, G. Denti, L. Sabatino, S. Serroni, M. Ciano, and V. Balzani: "Luminescent and Redox-reactive Oligometallic Coordination Compounds: Trinuclear Ruthenium(II) Complexes with Bis(2-pyridyl)pyrazine Bridging Ligands", *Gazz. Chim. Ital.*, **119**, 415 (1989).
- 191- V. Balzani: "Supramolecular Photochemistry", *Pure Appl. Chem.*, **62**, 1099 (1990).
- 192- V. Balzani and R. Ballardini: "New Trends in the Design of Luminescent Metal Complexes", *Photochem. Photobiol.*, **52**, 409 (1990).
- 193- B. Alpha, R. Ballardini, V. Balzani, J.M. Lehn, S. Perathoner, and N. Sabbatini: "Antenna Effect in Luminescent Lanthanide Cryptates. A Photophysical Study", *Photochem. Photobiol.*, **52**, 299 (1990).
- 194- L. De Cola, P. Belser, F. Ebmeyer, F. Barigelletti, F. Voegtle, A. von Zelewsky, and V. Balzani: "Mononuclear, Dinuclear, and Trinuclear Ruthenium(II) Complexes of a Tris-bipyridine Bridging Ligand. Synthesis, Absorption Spectra, Redox Potentials, and Photophysical Properties", *Inorg. Chem.*, **29**, 495 (1990).
- 195- V. Balzani: "Photochemistry and Luminescence of Coordination Compounds", *J. Photochem. Photobiol., A: Chemistry*, **51**, 55 (1990).
- 196- V. Balzani and L. Moggi: "Photochemistry of Coordination Compounds: A Glance at Past, Present, and Future", *Coord. Chem. Rev.*, **97**, 313 (1990).

- 197- V. Balzani, F. Barigelletti, L. De Cola: "Metal complexes as light absorption and light emission sensitizers", *Topics Curr. Chem.* **158**, 31 (1990).
- 198-N. Sabbatini, M. Guardigli, A. Mecati, V. Balzani, R. Ungaro, A. Casnati, and A. Pochini: "Encapsulation of Lanthanide Ions in Calixarene Receptors. A strongly Luminescent Tb<sup>3+</sup> Complex", *J. Chem. Soc. Chem. Commun.*, 878 (1990).
- 199- G. Denti, S. Campagna, L. Sabatino, S. Serroni, M. Ciano, and V. Balzani: "A Heptanuclear Ruthenium(II) Polypyridine Complex: Synthesis, Absorption Spectrum, Luminescence, Electrochemical Behaviour", *Inorg. Chim. Acta*, **176**, 175 (1990).
- 200- G. Denti, S. Campagna, L. Sabatino, S. Serroni, M. Ciano, and V. Balzani: "Luminescent and Redox-reactive Building Blokes for the Design of Photochemical Molecular Devices: Mono-, Di-, Tri-, and Tetra-nuclear Ruthenium(II) Polypyridine Complexes", *Inorg. Chem.*, **29**, 4750 (1990).
- 201- V. Balzani, E. Berghmans, J.-M. Lehn, N. Sabbatini, R. Terorde, and R. Ziessel: "Luminescence Properties of Eu<sup>3+</sup> Complexes of Tripode and Tetrapode Ligands", *Helvetica Chimica Acta*, **73**, 2083 (1990).
- 202- V. Balzani, L. De Cola, L. Prodi, and F. Scandola: "Photochemistry of Supramolecular Species", *Pure and Applied Chemistry*, **62**, 1457 (1990).
- 203- V. Balzani and F. Scandola: "Supramolecular Photochemistry: Photochemical Molecular Devices", in *Sensor and Actuators*, A. Driessen ed., Kluwer, Deventer (Holland), 1990, p. 99.
- 204- V. Balzani, R. Ballardini, M.T. Gandolfi, and L. Prodi: "Supramolecular Photochemistry of Coordination Compounds: Ion-pairs and Host-Guest systems", in *Frontiers in Supramolecular Organic Chemistry and Photochemistry*, H.-J. Schneider and H. Durr eds, Verlag Chemie, (1991), p. 371.
- 205- F. Barigelletti, L. De Cola, V. Balzani, R. Hage, J. G. Haasnoot J. Redjik, and J. G. Vos: "Mononuclear and dinuclear osmium (II) compounds containing 2,2'-bipyridine and 3,5-bis(pyridine-2-yl)-1,2,3,4-triazole: synthesis, electrochemistry, absorption spectra, and luminescence properties", *Inorg. Chem.*, **30**, 641 (1991).
- 206- V. Balzani, F. Bolletta, L. De Cola, M.T. Gandolfi, M. Maestri, M.F. Manfrin, L. Moggi, L. Prodi, N. Sabbatini, R. Ballardini, F. Barigelletti, M. Ciano, and L. Flamigni, "Supramolecular Photochemistry", in *Macrocyclic and supramolecular chemistry in Italy*, U. Tonellato and P.A. Vigato eds., University Press, Padova, 1990, p. 13.

- 207- N. Sabbatini, A. Mecati, M. Guardigli, V. Balzani, J.-M. Lehn, R. Ziessel, and R. Ungaro: "Lanthanide Luminescence in Supramolecular Species", *Journal of Luminescence*, **48-49**, 463 (1991).
- 208- L. Prodi, R. Ballardini, M.T. Gandolfi, V. Balzani, J. P. Desvergne, and H. Bouas-Laurent: "Supramolecular photochemistry and photophysics. Mutual inhibition of host and guest photochemistry and luminescence in the adduct of an anthraceno-crown ether with  $\text{Pt}(\text{bpy})(\text{NH}_3)_2^{2+}$ ", *J. Phys. Chem.*, **95**, 2080 (1991).
- 209- G. Denti, S. Campagna, L. Sabatino, S. Serroni, M. Ciano, and V. Balzani: "Towards an Artificial Photosynthesis", in *Photochemical Conversion and Storage of Solar Energy*, E. Pellizzetti and M. Schiavello eds., Kluwer, Dordrecht (Holland), 1991, p. 27-45.
- 210- V. Balzani, F. Scandola: **Supramolecular Photochemistry**, Ellis Horwood, Chichester, England, 1991, pp. 425.
- 211- J. P. Collin, S. Guillerez, J. P. Sauvage, F. Barigelletti, L. De Cola, L. Flamigni, and V. Balzani: "Photoinduced processes in dyads and triads containing a Ru(II)-bis-terpyridine photosensitizers covalently linked to electron donor and acceptor groups", *Inorg. Chem.*, **30**, 4230 (1991).
- 212- L. De Cola, F. Barigelletti, V. Balzani, R. Hage, J. G. Haasnoot J. Redjik, and J. G. Vos: "Electronic energy transfer in bimetallic Ru-Os complexes" *Chem. Phys. Letts.*, **178**, 491 (1991).
- 213- M.T. Gandolfi, T. Zappi, R. Ballardini, L. Prodi, V. Balzani, J.F. Stoddart, J.P. Mathias, and N. Spencer: "Host-guest adducts of aromatic crown-ethers with  $\text{Pt}(\text{bpy})(\text{NH}_3)_2^{2+}$ . Structure effects on the photochemical and photophysical properties", *Gazz. Chim. Ital.*, **121**, 521 (1991).
- 214- V. Balzani, G. Denti, S. Campagna, L. Sabatino, S. Serroni, and M. Ciano: "Photochemical molecular devices: luminescent and redox-reactive oligonuclear metal complexes", in P.A. Vigato Ed. *Sintesi e Metodologie Speciali in Chimica Inorganica*, University Press, Padova, 1991, p. 209.
- 215- N. Armaroli, V. Balzani, F. Barigelletti, L. De Cola, J. P. Sauvage, and C. Hemmert: "Excited state properties in supramolecular systems. Luminescence and intercomponent interactions in a 3-catenand and some 3-catenates", *J. Am. Chem. Soc.*, **113**, 4033 (1991).
- 216- G. Denti, S. Serroni, S. Campagna, V. Ricevuto, and V. Balzani: "Directional energy transfer in a luminescent tetranuclear Ru(II) polypyridine complex that

- contains two different types of bridging ligands", *Inorg. Chim. Acta*, **182**, 127 (1991).
- 217- V. Balzani, J.-M. Lehn, J. van de Loosdrecht, A. Mecati, N. Sabbatini, and R. Ziessel: "Luminescence Properties of  $\text{Eu}^{3+}$  and  $\text{Tb}^{3+}$  Complexes of Branched Macrocyclic Ligands which Contain Four Bipyridine Units", *Angew. Chem. Intern. Ed. Engl.*, **30**, 190 (1991)
- 218- S. Campagna, G. Denti, S. Serroni, M. Ciano, and V. Balzani: "Hexanuclear homo and heterobridged Ru(II) polypyridine complexes. Syntheses, absorption spectra, luminescence, properties, and electrochemical behavior", *Inorg. Chem.*, **30**, 3728 (1991).
- 219- S. Serroni, G. Denti, S. Campagna, M. Ciano, and V. Balzani: "A decanuclear Ru(II) polypyridine complex: synthesis, absorption spectrum, luminescence, electrochemical behavior", *J. Chem. Soc. Chem. Commun.*, 944 (1991).
- 220- G. Denti, S. Serroni, S. Campagna, Vittorio Ricevuto, and V. Balzani: "Made-to-order control of the direction of electronic energy transfer in tetranuclear luminescent metal complexes", *Coord. Chem. Rev.*, **111**, 227 (1991)
- 221- L. Prodi, M. Maestri, V. Balzani, J.-M. Lehn, and C. Roth: "Luminescence properties of cryptate Eu(III) complexes incorporating heterocyclic N-oxide groups", *Chem. Phys. Letts*, **180** 45 (1991).
- 222- L. Prodi, M. Maestri, R. Ziessel, and V. Balzani: "Luminescent  $\text{Eu}^{3+}$ ,  $\text{Tb}^{3+}$  and  $\text{Gd}^{3+}$  complexes of a branched triazacyclononane ligand containing three 2,2'-bipyridine units", *Inorg. Chem.*, **30** 3798 (1991).
- 223- P.L. Anelli, V. Balzani, L. Prodi, and F. Uggeri: "Luminescence properties of  $\text{Eu}^{3+}$  complexes of highly polydentate ligands", *Gazz. Chim. Ital.*, **121**, 359 (1991)
- 224- F. Voegtle, I. Luer, V. Balzani, and N. Armaroli: "Endoreceptors with convergent phenanthroline units: a molecular cavity for six guest molecules", *Angew Chem. Int. Edit. Engl.* **30**, 1333 (1991).
- 225- L. De Cola, F. Barigelletti, V. Balzani, P. Belser, A. von Zelewsky, C. Seel, M. Frank, and F. Voegtle: "Polynuclear complexes of tris(bipyridine) bridging ligands. Energy transfer from Ru-based to Os-based components". *Coord. Chem. Rev.*, **111**, 255 (1991).
- 226- J.-P. Collin, S. Guillerez, J.-P. Sauvage, F. Barigelletti, L. Flamigni, L. De Cola, and V. Balzani: "Photoinduced charge separation in dyads and triads containing a

- ruthenium(II)- or osmium(II)-bis-terpyridine photosensitizer covalently linked to electron donor and acceptor groups". *Coord. Chem. Rev.*, **111**, 291 (1991).
- 227- P.L. Anelli, P.R. Ashton, R. Ballardini, V. Balzani, M. Delgado, M.T. Gandolfi, T.T. Goodnow, A.E. Kaifer, D. Philp, M. Pietraszkiewicz, L. Prodi, M.V. Reddington, A.M.Z. Slawin, N. Spencer, J.F. Stoddart, C. Vicent, D.J. Williams: "Molecular meccano. 1. [2]rotaxanes and a [2]catenane made to order", *J. Am. Chem. Soc.*, **114**, 193 (1992).
- 228- M. Maestri, V. Balzani, C. Deuschel-Cornioley, and A. von Zelewsky: "Photochemistry and luminescence of cyclometallated complexes", *Advances in Photochemistry*, **17**, 1 (1992).
- 229- N. Armaroli, L. De Cola, V. Balzani, J.P. Sauvage, C.O. Dietrich-Buchecker, and J.M. Kern: "Absorption and luminescence properties of 1,10-phenanthroline, 2,9-diphenyl-1,10-phenanthroline, 2,9-dianisyl-1,10-phenanthroline and their protonated forms in dichloromethane solution", *J. Chem. Soc. Faraday Trans.*, **88**, 553 (1992).
- 230- R. Ballardini, M.T. Gandolfi, M.L. Moya, L. Prodi, and V. Balzani: "Supramolecular photochemistry and photophysics. Adducts of metal complexes with the natural ionophore lasalocid acid A anion", *Israel J. Chem.*, **32**, 47 (1992).
- 231- J.-P. Collin, S. Guillerez, J.-P. Sauvage, F. Barigelletti, L. De Cola, L. Flamigni, and V. Balzani: "Photoinduced processes in dyads and triads. An osmium(II)-bis-terpyridine photosensitizer covalently linked to electron donor and acceptor groups", *Inorg. Chem.*, **31**, 4112 (1992).
- 232- V. Balzani, S. Campagna, G. Denti, S. Serroni: "Supramolecular photochemistry: antenna effect in polynuclear metal complexes" in *Photoprocesses in transition metal complexes, biosystems and other molecules: experiment and theory*. E. Kochanski ed., Kluwer, Dordrecht, 1992, p. 233-269.
- 233- G. Denti, S. Campagna, S. Serroni, M. Ciano, V. Balzani: "Decanuclear homo- and heterometallic polypyridine complexes. Synthesis, absorption spectra, luminescence, electrochemical oxidation, intercomponent energy transfer" *J. Am. Chem. Soc.* **114**, 2944 (1992).
- Highlights:** *Chemical and Engineering News*, 1993, March 15, 3; *Nature*, 1995, 374, 13.
- 234- E.C. Constable, A.M.W. Cargill Thompson, N. Armaroli, V. Balzani, M. Maestri: "Ligand substitution patterns control photophysical properties of Ruthenium(II)-2,2':6',2"-terpyridine complexes", *Polyhedron*, **11**, 2707 (1992).

- 235- S. Campagna, G. Denti, S. Serroni, M. Ciano, A. Juris, V. Balzani: "A tridecanuclear ruthenium(II)-polypyridine supramolecular species: synthesis, absorption and luminescence properties, electrochemical oxidation", *Inorg. Chem.*, **31**, 2982 (1992).
- 236- L. De Cola, F. Barigelletti, V. Balzani, P. Belser, A. von Zelewsky, C. Seel, M. Frank, F. Voegtle: "Ru(II) and/or Os(II) trimetallic complexes of tris(bipyridine) bridging ligands. Absorption spectra, luminescence properties, electrochemical behavior, and intercomponent energy transfer", in *Supramolecular Chemistry*, V. Balzani and L. De Cola eds., Kluwer, Dordrecht, 1992, p. 157-180.
- 236bis- V. Balzani and L. De Cola eds.: **Supramolecular Chemistry**, Kluwer, Dordrecht, 1992.
- 237- J.H. van Diemen, R. Hage, J.G. Haasnoot, H.E.B. Lempers, J. Reedijk, J.G. Vos, L. De Cola, F. Barigelletti, and V. Balzani: "Electrochemical and photophysical properties of new triazole-bridged heterobimetallic ruthenium-rhodium and ruthenium-iridium complexes", *Inorg. Chem.*, **31**, 3518 (1992).
- 238- G. Denti, S. Serroni, S. Campagna, A. Juris, M. Ciano, and V. Balzani: "Complexes-as-metals and complexes-as-ligands: synthetic strategies to design supramolecular compounds featuring made-to-order luminescent and redox properties", in *Perspectives in Coordination Chemistry*, A.F. Williams, C. Floriani, and A. Merbach eds., VCH, Basel, 1992, p. 153-164.
- 239- S. Campagna, V. Ricevuto, G. Denti, S. Serroni, A. Juris, M. Ciano, and V. Balzani: "Polynuclear metal complexes with made-to-order oxidation potentials", in *Advanced Syntheses and Methodologies in Inorg. Chem.*, S. Daolio et al., eds., University Press, Padova, 1992, p.128.
- 240- G. Denti, S. Serroni, S. Campagna, V. Ricevuto, A. Juris, M. Ciano, and V. Balzani: "Hexanuclear polypyridine complexes containing different metals, bridging ligands, and/or terminal ligands. Absorption spectra, electrochemical oxidation, luminescence properties, intercomponent energy transfer", *Inorg. Chim. Acta*, **198-200**, 507, (1992).
- 241- V. Balzani: "Supramolecular photochemistry", *Tetrahedron*, **48**, 10443 (1992).
- 242- S. Serroni, G. Denti, S. Campagna, A. Juris, M. Ciano, and V. Balzani: "Arborols based on luminescent and redox-reactive transition metal complexes", *Angew. Chem. Intern. Edit. Engl.*, **31**, 1493 (1992).

- Highlights:** *Angew. Chem. Int. Ed.*, 1992, 31, 1571; *Chemical and Engineering News*, 1993, February 1, 28; *Chemistry and Engineering News*, 1993, August 16, 20.
- 243- R. Ziessel, M. Maestri, L. Prodi, V. Balzani, and A. van Dorsselaer: "Dinuclear  $\text{Eu}^{3+}$ ,  $\text{Tb}^{3+}$  and  $\text{Gd}^{3+}$  complexes of a branched hexaazacyclooctadecane ligand containing six 2,2'-bipyridine pendant units", *Inorg. Chem.*, **32**, 1237 (1993).
- 244- P. Belser, A. von Zelewsky, M. Frank, C. Seel, F. Voegtle, L. De Cola, F. Barigelletti, V. Balzani: "Supramolecular Ru and/or Os complexes of tris(bipyridine) bridging ligands. Syntheses, absorption spectra, luminescence properties, electrochemical behavior, intercomponent energy and electron transfer", *J. Am. Chem. Soc.* **115**, 4076 (1993).
- 245- G. Denti, S. Serroni, S. Campagna, A. Juris, V. Balzani: "Small-upward approach to nanostructures: dendritic polynuclear metal complexes for light harvesting", *Molec. Cryst. Liquid. Cryst.*, **234**, 79 (1993).
- 246- L. De Cola, F. Barigelletti, V. Balzani, P. Belser, A. von Zelewsky, M. Frank, C. Seel, F. Voegtle: "Dinuclear complexes of Ru and Os containing a bridging ligand: Photophysical properties and photoinduced energy transfer", *Molec. Cryst. Liquid. Cryst.*, **234**, 115 (1993).
- 247- N. Armaroli, L. De Cola, V. Balzani, J.-P. Sauvage, C.O. Dietrich-Buchecker, J.-M. Kern, and A. Bailal, "Absorption and emission properties of a 2-catenand, its protonated forms, and its  $\text{Li}^+$ ,  $\text{Cu}^+$ ,  $\text{Ag}^+$ ,  $\text{Co}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Pd}^{2+}$ , and  $\text{Cd}^{2+}$  metal complexes. Tuning of the luminescence over the whole visible spectral region", *J. Chem. Soc. Dalton Trans.*, 3241 (1993).
- 248- V. Balzani and M. Maestri: "Intermolecular electron and energy transfer processes", in K. Kalliasundaram and M. Graetzel, eds, in *Photosensitization and photocatalysis using inorganic and organometallic complexes*, Kluwer, Dordrecht (NL), 1993, p. 15.
- 249- V. Balzani, R. Ballardini, F. Bolletta, M.T. Gandolfi, A. Juris, M. Maestri, M.F. Manfrin, L. Moggi, and N. Sabbatini: "From a molecular to a supramolecular photochemistry", *Coord. Chem. Rev.*, **125**, 75 (1993).
- 250- S. Roffia, M. Marcaccio, C. Paradisi, F. Paolucci, V. Balzani, G. Denti, S. Serroni, and S. Campagna: "Electrochemical reduction of 2,2'-bipyridine and bis(2-pyridyl)pyrazine ruthenium(II) complexes used as building blocks for supramolecular species. Redox series made of eight, ten and twelve redox steps", *Inorg. Chem.*, **32** 3003 (1993).



- 251- V. Balzani, G. Denti, S. Serroni, S. Campagna, V. Ricevuto, and A. Juris: "Supramolecular photochemistry. Luminescent and redox active dendritic polynuclear metal complexes", *Proc. Indian Acad.Sci (Chem. Sci.)*, **105**, 421 (1993).
- 252- P.R. Ashton, R. Ballardini, V. Balzani, M. Blower, M. Ciano, M.T. Gandolfi, L. Prodi, C.H. McLean, D. Philp, N. Spencer, J.F. Stoddart, M.S. Tolley: "The control of translational isomerism in catenated structures", *New J. Chem.*, **17** 689 (1993).
- 253- F. Barigelletti, L. Flamigni, V. Balzani, J.P. Collin, J.P. Sauvage, A. Sour, E.C. Constable, A.M.W. Cargill Thompson: "Luminescence properties of Rigid rod-like binuclear Ru(II)/Os(II) terpyridine complexes: electronic interaction through phenyl bridges", *J. Chem. Soc. Chem. Commun.*, 942 (1993).
- 254- L. De Cola, V. Balzani, F. Barigelletti, L. Flamigni, P. Belser, A. von Zelewsky, M. Frank, and F. Vögtle: Photoinduced energy and electron transfer processes in supramolecular species. Tris(bipyridine) complexes of Ru(II)/Os(II), Ru(II)/Ru(III), Os(II)/Os(III), and Ru(II)/Os(III) separated by a rigid spacer", *Inorg. Chem.*, **32**, 5228 (1993).
- 255- V. Balzani: "Chimica supramolecolare", *La Chimica nella Scuola*, n. 5, 2 (1993).
- 256- C.O. Dietrich-Buchecker, J.-F. Nierengarten, J.-P. Sauvage, N. Armaroli, V. Balzani, and L. De Cola: "Dicopper(I) trefoil knots and related unknotted molecular systems: influence of ring size and structural factors on their synthesis, electrochemical and excited state properties", *J. Am. Chem. Soc.*, **115**, 11237 (1993).
- 257- R. Ballardini, V. Balzani, M.T. Gandolfi, L. Prodi, M. Venturi, D. Philp, H.G. Ricketts, J.F. Stoddart: "A photochemically-driven molecular machine", *Angew. Chem. Int. Ed. Engl.* **32**, 1301 (1993).
- Highlights:** *Chemistry and Industry*, 1994, January 3, 1994, 29; *Chemistry and Industry*, 1994, 19 December, 992; *Chemistry in Britain*, 1995, 31(1), 33.
- 258- F. Vögtle, M. Frank, M. Nieger, P. Belser, A. von Zelewsky, V. Balzani, F. Barigelletti, L. De Cola, and L. Flamigni: "Rigid rod-like metal complexes of nanometric dimension. Synthesis, luminescence properties, long-range energy transfer", *Angew. Chem. Int. Edit. Engl.*, **32**, 1643 (1993).
- 259- P.R. Ashton, R. Ballardini, V. Balzani, M.T. Gandolfi, D.J.-M Marquis, L. Pérez-Garcia, L. Prodi, J.F. Stoddart, and M. Venturi: "The self-assembly of controllable [2]catenanes", *J. Chem. Soc. Chem. Commun.*, 177 (1994).
260. V. Balzani: "Chemistry and light", in *Conceptual tools for understanding Nature*, G. Costa, G. Calucci, and M. Giorgi eds., World Scientific Publ., 1995, p. 136.

- 261- G. Denti, S. Campagna, and V. Balzani: "Dendritic polynuclear metal complexes with made-to-order luminescent and redox properties", in *Mesomolecules: from molecules to materias*, G.D. Mendenhall, A. Greenberg, and J. Liebman eds., Chapman and Hall, New York, 1994, p. 69-106
- 262- L. De Cola, V. Balzani, F. Barigelletti, L. Flamigni, P. Belser, A. von Zelewsky, M. Frank, and F.Vögtle: "Photoinduced processes in dinuclear complexes containing rigid bridging ligands", *Molec. Cryst. Liquid. Cryst.*, **252**, 97 (1994).
- 263- F. Barigelletti, L. Flamigni, V. Balzani, J.-P. Collin, J.-P. Sauvage, A. Sour, E.C. Constable, and A.M.W. Cargill Thompson: "Intramolecular energy transfer through phenyl bridges in rod-like dinuclear Ru(II)/Os(II) terpyridine-type complexes", *Coord. Chem. Review*, **132**, 209 (1994)
- 264- V. Balzani, S. Campagna, G. Denti, A. Juris, S. Serroni, and M. Venturi: "Bottom-up strategy to obtain luminescent and redox-active metal complexes of nanometric dimensions", *Coord. Chem. Review*, **132**, 1 (1994).
- 265- A. Juris, V. Balzani, S. Campagna, G. Denti, S. Serroni, G. Frei, and H.U. Gudel: "Near infrared luminescence of supramolecular species made of Os(II) and/or Ru(II)-polypyridine components". *Inorg. Chem.*, **33**, 1491 (1994).
- 266- N. Armaroli, V. Balzani, I. Lürer, and F. Vögtle: "Supramolecular photochemistry and photophysics: absorption spectra and luminescence properties of a large cage supermolecule and of its protonated forms", *Gazz. Chim. Ital.*, **124**, 17 (1994).
- 267- N. Armaroli, V. Balzani, F. Barigelletti, L. De Cola L. Flamigni, J.-P. Sauvage, C. Hemmert: "Supramolecular photochemistry and photophysics. A [3]-catenane and its mononuclear and homo and hetero-dinuclear [3] catenates", *J. Am. Chem. Soc.* **116**, 5211 (1994).
- 268- J-P Sauvage, J.-P. Collin, J.-C. Chambron, S. Guillerez, C. Coudret, V. Balzani, F. Barigelletti, L. De Cola, and L. Flamigni: "Ru(II) and Os(II) bis(terpyridine) complexes in covalently-linked multicomponent systems. Synthesis, electrochemical behavior, absorption spectra, photochemical and photophysical properties", *Chem. Rev.*, **94**, 993 (1994).
- 269- A.J. Parola, F. Pina, M. Maestri, N. Armaroli, and V. Balzani: "Supramolecular photochemistry and photophysics. 9-cyanoanthracene imprisoned in a hemicarcerand", *New J. Chem.*, **18**, 659 (1994).

- 270- N. Armaroli, V. Balzani, L. De Cola, C. Hemmert, and J.-P. Sauvage: "Multi-protonation of a [3]-catenand and of a mono-copper [3]-catenate. Absorption spectra and luminescence properties", *New J. Chem.*, **18**, 775 (1994).
- 271- V. Balzani: "Molecular dendrimers for light harvesting", *New Scientist*, November 12 (n. 1951), 30 (1994).
- 272 -R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, F. Kotzyba-Hibert, J.M. Lehn, L. Prodi : "Supramolecular photochemistry and photophysics. A cylindrical macrotricyclic receptor and its adducts with protons, ammonium ions, and a Pt(II) complex", *J. Am. Chem. Soc.* **116**, 5741 (1994).
- 273- S. Campagna, G. Denti, S. Serroni, A. Juris, M. Venturi, and V. Balzani: "Dendritic luminescent and redox-active supermolecules made of transition-metal complexes", in *Self-production of supramolecular structures*, G.R. Fleischaker, S. Colonna, and P.L. Luisi, eds, Kluwer, Dordrech, 1994, p. 261.
- 274- S. Serroni, A. Juris, S. Campagna, M. Venturi, G. Denti, V. Balzani: "Tetranuclear bimetallic complexes of Ruthenium, Osmium, Rhodium and Iridium. Synthesis, absorption spectra, luminescence, and electrochemical properties", *J. Am. Chem. Soc.* **116**, 9086 (1994)
- 275- F. Barigelletti, L. Flamigni, V. Balzani, J.-P. Collin, J.-P. Sauvage, A. Sour, E.C. Constable, and A.M.W. Cargill Thompson: "Rigid rod-like dinuclear Ru(II)/Os(II) terpyridine-type complexes. Electrochemical behavior, absorption spectra, luminescence properties, and electronic energy transfer through phenylene bridges", *J. Am. Chem. Soc.* **116**, 7692 (1994).
- Highlight:** *Nature*, 1994, 372, 133.
- 276- S. Serroni, S. Campagna, A. Juris, M. Venturi, V. Balzani, and G. Denti: "Polyether arborols mounted on a luminescent and redox-active Ru(II)-polypyridine core", *Gazz. Chim. Ital.*, **124**, 423 (1994).
- 277- V. Balzani; A. Credi, and F. Scandola: "Supramolecular photochemistry and photophysics. Energy conversion and information-processing devices based on transition metal complexes", in *Transition metal ions in supramolecular chemistry*, L. Fabbrizzi and A. Poggi, eds., Kluwer, Dordrecht, 1994, p. 1-32.
- 278- (a) V. Balzani and F. Scandola: "Photochemistry, A new Dimension of Chemistry", *Chimica e Industria*, **77**, 24 (1995); (b) *Quimica Nova*, **19**, 542 (1996).
- 279- M.C. Borghini, L. Prodi, R. Ballardini, M.T. Gandolfi, V. Balzani, R.J.M. Nolte, C.F. Martens, R.J.M. F. Gebbink: "Supramolecular photochemistry and

- photophysics. Adducts of  $\text{Pt}(\text{bpy})(\text{NH}_3)_2^{2+}$  with basket-shaped hosts", *Supramolecular Chemistry*, **4**, 309 (1995).
- 280- V. Balzani, A. Credi, and F. Scandola: "Artificial devices for light harvesting and charge separation", *Médecine Biology Environment*, **23**, 22 (1995)
- 281- F. Barigelletti, L. Flamigni, V. Balzani, J.-P. Collin, J.-P. Sauvage, A. Sour: "Luminescence properties of rigid rod-like dichromophoric species. Dinuclear Ru/Os terpyridyne-type complexes with 2.4 nm metal-to-metal distance", *New J. Chem.*, **19**, 793 (1995).
- 282- V. Balzani, S. Campagna, G. Denti, A. Juris, S. Serroni, and M. Venturi: "Harvesting sunlight by artificial supramolecular antennae", *Solar En. Mater. Solar Cells*, **38**, 159 (1995).
- 283- P. Belser, R. Dux, M. Baak, L. De Cola, V. Balzani: "Electronic energy transfer in a supramolecular species containing the  $\text{Ru}(\text{bpy})_3^{2+}$ ,  $\text{Os}(\text{bpy})_3^{2+}$ , and anthracene chromophoric units", *Angew. Chem. Int. Ed. Engl.* **34**, 595 (1995).
- 284- L. De Cola, V. Balzani, P. Belser, R. Dux, and M. Baak: "Electronic energy transfer in supramolecular systems. Self-poisoning and self-educating systems", *Supramolecular Chemistry*, **5**, 297 (1995).
- 285- G. Denti, S. Campagna, S. Serroni, V. Balzani, A. Juris, and M. Venturi: "Luminescent and redox-active dendrimers made of Ru(II) and Os(II) polypyridine building blocks", in *Polymeric Material Enciclopedia*, CCR Press, **3**, 1799 (1996).
- 286- M. Maestri, N. Armaroli, V. Balzani, E.C. Constable, and A.M.W. Cargill Thompson: "Complexes of the Ru(II)-2,2':6',2"-terpyridine family. Effect of electron-accepting and -donating substituents on the photophysical and electrochemical properties", *Inorg. Chem.*, **34**, 2759 (1995).
- 287- F. Scandola, C.A. Bignozzi, V. Balzani: "Chemistry and light. Part 2: Light and energy", *Chimica e Industria*, **77**, 959 (1995).
- 288- A.J. Parola, F. Pina, E. Ferreira, M. Maestri, N. Armaroli R. Ballardini, and V. Balzani: "Supramolecular Photochemistry and Photophysics. Biacetyl Imprisoned in a Hemicarcerand", *J. Phys. Chem.*, **99**, 12701 (1995).
- 289- D. Armspach, P.R. Ashton, R. Ballardini, V. Balzani, A. Godi, C.P. Moore, L. Prodi, N. Spencer, J.F. Stoddart, M.S. Tolley, T.J. Wear and D.J. Williams: "Catenated cyclodextrins", *Chem. Eur. J.*, **1**, 33 (1995).
- 290- S. Campagna, G. Denti, S. Serroni, A. Juris, M. Venturi, V. Ricevuto, and V. Balzani: "Dendrimers of nanometer size based on metal complexes. Luminescent and

- redox-active polynuclear metal complexes containing up to 22 metal centers", *Chem. Eur. J.*, **1**, 211 (1995)
- 291- P.R. Ashton, R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, D.J.-F. Marquis, S. Menzer, L. Pérez-Garcia, L. Prodi, J.F. Stoddart, M. Venturi, A.J.P. White, and D.J. Williams: "Molecular meccano 4. The self-assembly of [2]catenanes incorporating photo-active and electro-active  $\pi$ -extended systems", *J. Am. Chem. Soc.*, **117**, 11171 (1995).
- 292- L. De Cola, V. Balzani, F. Barigelletti, L. Flamigni, P. Belser, S. Bernhard: "Photoinduced energy and electron transfer processes in dinuclear Ru(II) and/or Os(II) complexes connected by a linear rigid bis-chelating bridge", *Rec. Trav. Chim. Pays-Bas*, **114**, 534 (1995).
- 293- V. Balzani, D.A. Bardwell, F. Barigelletti, R.L. Clearly, M. Guardigli, J.C. Jeffery, T. Sovrani, and M. D. Ward: "Dinuclear Ru(II) and/or Os(II) complexes of a non-symmetric bis-chelating quaterpyridine ligand. Synthesis, electrochemical behavior, absorption spectra, luminescence properties, intercomponent energy transfer", *J. Chem. Soc., Dalton Trans.*, 3601 (1995).
- 294- R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, L. Prodi, M. Venturi, L. Pérez-Garcia, J.F. Stoddart: "Photochemical, photophysical and electrochemical properties of a photoisomerizable cyclophane and its [2]catenates with aromatic crown ethers", *Gazz. Chim. Ital.*, **125**, 353 (1995).
- 295- V. Balzani: "Interazione della luce con molecole intelligenti", *Bolettino SIRR*, Anno V, N.ro 1, 7 (1995)
- 296- N. Armaroli, M.A.J. Rodgers, P. Ceroni, V. Balzani, C.O. Diethrich-Buchecker, J.M. Kern, A. Bailal, and J.-P. Sauvage: "Nature of the lowest excited state of a bis-phenanthroline [2]-catenand and its Cu(I), Ag(I), and Cu(II) complexes", *Chem. Phys. Letts.*, **241**, 555 (1995).
- 297- A. Juris, M. Venturi, L. Pontoni, I.R. Resino, V. Balzani, S. Serroni, S. Campagna, and G. Denti: "Protected building blocks for luminescent and redox active dendritic metal complexes. Excited state properties and electrochemical behavior", *Can. J. Chem.*, **73**, 1875 (1995).
- 298- A. Credi, V. Balzani, S. Campagna, G.S. Hanan, C.R. Arana, and J.-M. Lehn: "Photophysical properties of a dinuclear rack-type Ru(II) complex and of its components", *Chem. Phys. Letts.*, **243**, 102 (1995).

- 299- (a) V. Balzani: "La fotochimica: un fenomeno naturale vecchio come il mondo, una scienza per il futuro", *Rendiconti della Accademia Nazionale delle Scienze detta dei XL*, **113**, 1 (1995). (b) V. Balzani: "Chimica e Luce", *Atti della Accademia delle Scienze di Torino*, **4**, 1-18 (1996).
- 300- V. Balzani and F. Scandola: "Photochemical and photophysical devices", in *Comprehensive supramolecular chemistry*, Vol. 10, D.N. Reinhoudt ed., Pergamon Press, Oxford, England, 687-746 (1996).
- 301- V. Balzani, A. Juris, M. Venturi, S. Campagna, and S. Serroni: "Luminescent and redox-active polynuclear transition-metal complexes", *Chem. Rev.*, **96**, 759 (1996).
- 302- R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, S.J. Langford, S. Menzer, L. Prodi, J.F. Stoddart, M. Venturi, D.J. Williams: "Simple molecular machines. Cyclical chemically-driven unthreading and rethreading of a [2]pseudo-rotaxane", *Angew. Chem. Int. Edit. Engl.*, **35**, 978 (1996).
- Highlight:** *Chemical and Engineering News*, 1996, July 8, 26.
- 303- M. Frank, M. Nieger, F. Vögtle, P. Belser, L. De Cola, V. Balzani, F. Barigelletti, and L. Flamigni: "Dinuclear Ru(II) and/or Os(II) complexes of bis-bipyridine bridging ligands containing adamantane spacers. Synthesis, luminescence properties, intercomponent energy and electron transfer", *Inorg. Chim. Acta*, **242**, 281 (1996).
- 304- P.R. Ashton, R. Ballardini, V. Balzani, M. Belohradsky, M.T. Gandolfi, D. Philp, L. Prodi, F.M. Raymo, M.V. Reddington, N. Spencer, J.F. Stoddart, M. Venturi, D.J. Williams: "Self-assembly, spectroscopic and electrochemical properties of [n]rotaxanes", *J. Am. Chem. Soc.*, **118**, 4931 (1996).
- 305- B. Hasenknopf, J. Hall, J.-M. Lehn, V. Balzani, A. Credi, S. Campagna: "Linear tris-terpyridines and their trinuclear Ru(II) complexes: synthesis, absorption spectra and excited state properties", *New J. Chem.*, **20**, 725 (1996).
- 306- S. Campagna, S. Serroni, A. Juris, M. Venturi, and V. Balzani: "A novel hexanuclear, mixed-ligand complex based on a bridging ligand containing N-N and C<sup>-</sup>-N chelating sites. Absorption spectrum, excited state properties, electrochemical behaviour", *New J. Chem.*, **20**, 773 (1996).
- 307- C. Dietrich-Buchecker, J.-P. Sauvage, N. Armaroli, P. Ceroni, and V. Balzani: "Protonation-driven formation of a double stranded structure: a photophysical and <sup>1</sup>NMR study", *New J. Chem.*, **20**, 801 (1996).
- 308- C. Dietrich-Buchecker, J.P. Sauvage, N. Armaroli, P. Ceroni, V. Balzani: "Knotted heterodinuclear complexes", *Angew. Chem. Intern. Ed. Engl.*, **35**, 1119 (1996).

- 309- V. Balzani: "Congegni e macchine molecolari", *KNOS*, **127**, 38 (1996).
- 310- G. Knör, A. Vogler, S. Roffia, F. Paolucci, V. Balzani: "Switchable photoreduction pathways of antimony(V) porphyrin. A potential multielectron transfer photosensitizer", *J. Chem. Soc. Chem. Commun.*, 1643 (1996).
- 311- V. Balzani, A. Credi, F. Scandola: "Chemistry and light. Part 3. light and information: sensors and photochromic systems", *Chimica e Industria*, **78**, 1221 (1996).
- 312- V. Balzani, A. Credi, N. Armaroli: "Supramolecular photochemistry: recent advances", in *Physical Supramolecular Chemistry*, L. Eichegoyen and A.E. Kaifer, eds., Kluwer, Dordrecht, 1996, p. 163-177.
- 313- M. Montalti, R. Ballardini, L. Prodi, and V. Balzani: "Electronic energy transfer in adducts of aromatic crown ethers with protonated 9-methylaminomethylanthracene" *J. Chem. Soc. Chem., Commun.*, 2011, (1996).
- 314- F. Vögtle, I. Michel, R. Berscheid, M. Nieger, K. Rissanen, S. Kotila, K. Airola, N. Armaroli, M. Maestri, and V. Balzani: "Concave macrobicycles. Absorption spectra, luminescence properties, and endocavitational complexation of neutral organic guests", *Liebigs Ann.*, 1697 (1996).
- 315- J.P. Collin, J.-O. Dalbavie, V. Heitz, J.-P. Sauvage, L. Flamigni, N. Armaroli, V. Balzani, F. Barigelletti, I. Montanari: "A transition-metal assembled dyad containing a porphyrin module and an electro-deficient ruthenium complex", *Bull. Soc. Chim. France*, **133**, 749 (1996).
- 316- S. Serroni, S. Campagna, G. Denti, A. Juris, M. Venturi, V. Balzani: "Dendrimers based on metal complexes", *Advances in Dendritic Molecules*, **3**, 61-113 (1996).
- 317- A. J. Parola, F. Pina, E. Ferreira, M. Maestri, V. Balzani: "Photoinduced electron and energy transfer processes of biacetyl imprisoned in a hemicarcerand", *J. Am. Chem. Soc.*, **118**, 11610 (1996).
- 318- V. Balzani, F. Barigelletti, P. Belser, S. Bernhard, L. De Cola, L. Flamigni: "Rigid rodlike dinuclear Ru/Os complexes of a novel bridging ligand. Intercomponent energy and electron transfer processes", *J. Phys. Chem.*, **100**, 16786 (1996).
- 319- D. B. Amabilino, P.R. Ashton, V. Balzani, C.L. Brown, A. Credi, J.M.J. Freché, J.W. Leon, F.M. Raymo, N. Spencer, J.F. Stoddart, M. Venturi: "Self-Assembly of [n]Rotaxanes Bearing Dendritic Stoppers", *J. Am. Chem. Soc.*, **118**, 12012 (1996).
- 320- P.R. Ashton, R. Ballardini, V. Balzani, S.E. Boyd, A. Credi, M.T. Gandolfi, M. Gomez-Lopez, S. Iqbal, D. Philp, J.A. Preece, L. Prodi, H.G. Ricketts, J.F. Stoddart,

- M.S. Tolley, M. Venturi, A.J.P. White, and D.J. Williams: "Simple mechanical molecular machines. Photochemical and electrochemical control of switching processes", *Chem. Eur. J.*, **3**, 152 (1997).
- 321- A. Credi, V. Balzani, S.J. Langford, J.F. Stoddart: "Logic operations at the molecular level. An XOR gate based on a molecular machine", *J. Am. Chem. Soc.*, **119**, 2679 (1997).
- Highlights:** *New Scientist*, 1997, August 2, N. 2093, p. 32-35; *Chemistry and Industry*, 1999, March 1, 178; *Nature*, 2000, 406, 118-120; *Chemistry in Britain*, December 2000, p. 46-47.
- 322- B. König, H. Zieg, M. Nimtz, L. De Cola, V. Balzani: "Synthesis and Photophysical Properties of New 2,2'-Bipyridine-Bridged Bis[ruthenium(II)tris-2,2'-bipyridine] Complexes", *Chem. Ber.*, **130**, 529 (1997).
- 323- J. Issberner, F. Vögtle, L. De Cola, V. Balzani: "Dendritic bipyridine ligands and their tris(bipyridine)ruthenium(II) chelates. Syntheses, absorption spectra, and photophysical properties", *Chem. Eur. J.*, **3**, 706 (1997).
- 324- M. Asakawa, P.R. Ashton, R. Ballardini, V. Balzani, M. Belohradsky, M.T. Gandolfi, O. Kocian, L. Prodi, F.M. Raymo, J.F. Stoddart, and M. Venturi: "The slipping approach to self-assembling [n]rotaxanes", *J. Am. Chem. Soc.*, **119**, 302 (1997).
- 325- V. Balzani: "Fotochimica supramolecolare", *Atti dell'Istituto Lombardo delle Scienze*, 1997, 19.
- 326- L. Flamigni, N. Armaroli, F. Barigelletti, V. Balzani, J.-P. Collin, J.-O. Dalbavie, V. Heitz, J.-P. Sauvage: "Photoinduced processes in dyads made of a porphyrin unit and a ruthenium complex", *J. Phys. Chem. B*, **101**, 5936 (1997).
- 327- V. Balzani, A. Credi, F. Scandola: "Chemistry and Light. Part 4. Light and information: molecular machines, molecular electronics, molecular logic", *Chimica e Industria*, **79**, 751 (1997).
- 328- F. Pina, M. J. Melo, M. Maestri, R. Ballardini, V. Balzani: "Photochromism of 4'-methoxyflavylium perchlorate. A "write-lock-read-unlock-erase" molecular switching device", *J. Am. Chem. Soc.*, **119**, 5556 (1997).
- Highlights:** *New Scientist*, 1997, July 19, N. 2091, 12; *Chemistry and Industry*, 1997, August 18, N. 24, 655.



- 329- S. Quici, A. Manfredi, R. Rossi, S. Campagna, G. Calogero, V. Balzani: "A new family of bis(diazacron-anthracenoyl) luminescent receptors", *Gazz. Chim. Ital.*, **127**, 107 (1997).
- 330- S. Serroni, A. Juris, M. Venturi, S. Campagna, I. R. Resino, G. Denti, A. Credi, V. Balzani: "Polynuclear metal complexes of nanometer size. A versatile synthetic strategy leading to luminescent and redox-active dendrimers made of an Os(II)-based core and Ru(II)-based units in the branches", *J. Mater. Chem.*, **7**, 1227 (1997).
- 331- J.-M. Kern, J.-P. Sauvage, J.-L. Weidmann, N. Armaroli, L. Flamigni, P. Ceroni, V. Balzani: "Complexes containing 2,9-*p*-diphenyl-1,10-phenanthroline units incorporated into a 56-membered ring. Synthesis, electrochemistry, and photophysical properties", *Inorg. Chem.*, **36**, 5329 (1997).
- 332- V. Balzani: "Bottom up construction of photochemical molecular devices by modular chemistry", in *Modular Chemistry*, J. Michl ed., Kluwer, Dordrecht, The Netherlands, 1997, 433-449.
- 333- M. Asakawa, P. Ashton, V. Balzani, A. Credi, G. Mattersteig, O. A. Matthews, M. Montalti, N. Spencer, J. F. Stoddart and M. Venturi: "Electrochemically induced molecular motions in pseudorotaxanes. A case of dual mode (oxidative and reductive) dethreading", *Chem. Eur. J.*, **3**, 1992 (1997).
- 334- P. Belser, S. Bernhard, E. Jandrasics, A. von Zelewsky, L. De Cola, V. Balzani: "Synthesis and photophysical properties of chiral binuclear metal complexes", *Coord. Chem. Rev.*, **159**, 1 (1997).
- 335- V. Balzani, M.T. Gandolfi, M. Venturi: "Le intuizioni di Giacomo Ciamician, pioniere della chimica", *La Chimica nella Scuola*, settembre/ottobre, 98 (1997).
- 336- R. Ballardini, V. Balzani, C.L. Brown, A. Credi; R.E. Gillard, M. Montalti, D. Philp, J.F. Stoddart, M. Venturi, A.J.P. White, B.J. Williams, D.J. Williams: "Controlling catenation, properties and relative ring component movements in catenanes with aromatic fluorine substituents", *J. Am. Chem. Soc.*, **119**, 12503 (1997).
- 337- V. Balzani, A. Credi, M. Venturi: "Photoprocesses", *Current Opinions in Chemical Biology*, **1**, 506-513 (1997).
- 338- A. Livoreil, J.-P. Sauvage, N. Armaroli, V. Balzani, L. Flamigni, B. Ventura: "Electrochemically and photochemically driven ring motions in a disymmetrical copper [2]catenate", *J. Am. Chem. Soc.*, **119**, 12114-12124 (1997).

- 339- N. Armaroli, V. Balzani, F. Barigelletti, M.D. Ward, J.A. McCleverty: "Luminescence properties of  $\text{Eu}^{3+}$ ,  $\text{Tb}^{3+}$ , and  $\text{Gd}^{3+}$  complexes of the podand ligand tris-[3-(2'-pyridyl)pyrazol-1-yl]-1-yl]hydroborate", *Chem. Phys. Lett.*, **276**, 435 (1997).
- 340 N. Armaroli, P. Ceroni, V. Balzani, J.-M. Kern, J.-P. Sauvage, J.-L. Weidmann: "Protonation of free 2,9-bis(*p*-diphenyl-1,10-phenanthroline sites in a 56-membered macrocycle and in its Re(I) and Cu(I) complexes. Absorption spectra, luminescence properties, and excited state interactions", *Trans. Faraday Soc.* **93**, 4145 (1997).
- 341- P.R. Ashton, R. Ballardini, V. Balzani, M. Gomez-Lopez, S.E. Lawrence, M.V. Martinez-Diaz, M. Montalti, A. Piersanti, L. Prodi, J.F. Stoddart, D.J. Williams: "Hydrogen bonded complexes of aromatic crown ethers with (9-anthracenyl)ammonium derivatives. Supramolecular Photochemistry and Photophysics. pH controllable supramolecular switching", *J. Am. Chem. Soc.*, **119**, 10641 (1997).
342. P. Beer, F. Szemes, V. Balzani, C. M. Salà, M.G.B. Drew, S.W. Dent, M. Maestri: "Anion selective recognition and sensing by novel macrocyclic transition metal receptor systems.  $^1\text{H}$  NMR, electrochemical, and photophysical investigations", *J. Am. Chem. Soc.*, **119**, 11864-11875 (1997).
- 343- V. Balzani, S. Campagna, G. Denti, A. Juris, S. Serroni, M. Venturi: "Designing dendrimers based on transition-metal complexes. Light-harvesting properties and predetermined redox patterns", *Acc. Chem. Res.*, **31**, 26-34 (1998).
- Highlight:** *Chemical and Engineering News*, 1998, October 26, 37-46.
- 344- M. Asakawa, P. Ashton, V. Balzani, A. Credi, C. Hamers, G. Mattersteig, M. Montalti, A.N. Shipway, N. Spencer, J. F. Stoddart, M.S. Tolley, M. Venturi, A. J. P. White and D. J. Williams: "A chemically and electrochemically switchable [2]catenane incorporating a tetrathiafulvalene unit", *Angew. Chem. Int. Ed.*, **37**, 333 (1998).
- 345- J. Polin, E. Schmohel, V. Balzani: "Functionalization of 2,2'-bipyridines in their 4 and 5 positions. Synthesis of 5-ethynyl-2,2'-bipyridine", *Synthesis*, 321-324 (1998).
- 346- R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, D.J.-F. Marquis, L. Pérez-Garcia, J.F. Stoddart: "The synthesis and spectroscopic properties of a [2]catenane incorporating an anthracene chromophoric unit." *Eur. J. Org. Chem.*, **1**, 81-89 (1998)

- 347- V. Balzani, A. Credi, M. Venturi: "Photochemistry and photophysics of coordination compounds: and extended view", *Coord. Chem. Rev.*, **171**, 3-16 (1998).
- 348- R. Ballardini, V. Balzani, M.T. Gandolfi, R.E. Gillard, J.F. Stoddart, E. Tabellini: "The synthesis and spectroscopic properties of macrocyclic polyethers containing two different aromatic moieties and their [2]catenanes incorporating cyclobis(paraquat-*p*-phenylene)", *Chem. Eur. J.*, **4**, 449-459 (1998)
- 349- D. Amabilino, P.R. Ashton, V. Balzani, S.E. Boyd, A. Credi, J.Y. Lee, S. Menzer, J.F. Stoddart, M. Venturi, D.J. Williams: "Oligocatenanes made to order", *J. Am. Chem. Soc.*, **120**, 4295-4307 (1998).
- 350- A. Deronzier, P. Jardon, A. Matres, J.-C. Moutet, C. Santato, V. Balzani, A. Credi, F. Paolucci, S. Roffia, "Photoredox pathways for the polymerization of pyrrole-substituted ruthenium tris(bipyridyl) complex", *New J. Chem.*, **22**, 33-37 (1998).
- 351- G. Albano, V. Balzani, E.C. Constable, M. Maestri, and D.R. Smith: "Photoinduced processes in 4'-(9-anthryl)-2,2':6',2"-terpyridine and its Ru(II), Os(II), and Zn(II) metal complexes", *Inorg. Chim. Acta.*, **277**, 225-231 (1998).
- 352- F. Pina, A. Roque, M.J. Melo, M. Maestri, L. Belladelli, V. Balzani: "Multistate/multifunctional molecular-level systems. Light and pH switching between the ten forms of a synthetic flavylum salt", *Chem. Eur. J.*, **4**, 1184-1191 (1998).
- 353- A. Archut, F. Vögtle, L. De Cola, G.C. Azzellini, V. Balzani, P.S. Ramanujam, R.H. Berg: "Azobenzene-functionalized cascade molecules: photoswitchable supramolecular devices", *Chem. Eur. J.*, **4**, 699-706 (1998).
- 354- M. Venturi, S. Serroni, A. Juris, S. Campagna, V. Balzani: "Electrochemical and photochemical properties of metal-containing dendrimers", *Topics Curr. Chem.*, **197**, 193-228 (1998).
- 355- V. Balzani, M. Gomez-Lopez, J.F. Stoddart: "Molecular machines", *Acc. Chem. Res.*, **31**, 405-414 (1998).
- Highlight:** *Nature*, 1999, **401**, 120-121.
- 356- P.R. Ashton, V. Balzani, A. Credi, O. Kocian, D. Pasini, L. Prodi, N. Spencer, J.F. Stoddart, M.S. Tolley, M. Venturi, J.P. White, D.J. Williams: "Cyclophanes and [2]catenanes as ligands for transition metal complexes. Synthesis, structure, absorption spectra, excited state and electrochemical properties", *Chem. Eur. J.*, **4**, 590-607 (1998).

**Highlight:** *Chemtracts- Inorg. Chem.*, 1999, 12, 322.

357- F. Pina, M.J. Melo, A.J. Parola, M. Maestri, V. Balzani: "pH-Controlled photochromism of hydroxyflavinium ions", *Chem. Eur. J.*, **4**, 2001-2007 (1998).

358- V. Balzani, A. Credi: "Macchine molecolari azionate dalla luce", *Le Scienze*, n. 364, 76-81, dicembre 1998.

359- V. Balzani, A. Credi, L. De Cola: "From supramolecular photochemistry to photochemical molecular devices", *Atti della Accademia Nazionale dei Lincei*, **24**, 261-279 (1998).

360- V. Balzani: "La chimica verso il futuro: dispositivi e macchine molecolari" (Prolusione dell'Anno Accademico 1997-98, Università di Bologna. (a) Supplemento a *Il Cubo*, n. 9, novembre 1997, 15-28. (b) *Nuova Secondaria*, 15 ottobre 1998, p. 82-87. (c) "A Quimica rumo ao futuro: dispositivos e maquinas moleculares", *Quimica*, **68**, 9-15 (1998).

361- P. R. Ashton, V. Balzani, O. Kocian, L. Prodi, N. Spencer, J.F. Stoddart: "A light-fueled "piston-cylinder" molecular-level machine", *J. Am. Chem. Soc.*, **120**, 11190-11191 (1998).

**Highlights:** *Chemical and Engineering News*, 1998, October 26, 37-46; *Chemistry and Industry*, 1999, March 1, 178.

362- A. Credi, M. Montalti, V. Balzani, S.J. Langford, F.M. Raymo, J.F. Stoddart: "Simple molecular-level machines. Interchange between different threads in pseudorotaxanes", *New. J. Chem.*, **22**, 1061-1065 (1998).

363- P.R. Ashton, R. Ballardini, V. Balzani, E.C. Constable, A. Credi, O. Kocian, S.J. Langford, J.A. Preece, L. Prodi, E.R. Schofield, N. Spencer, J.F. Stoddart, S. Wenger: "Ru(II)-polypyridine complexes covalently linked to electron acceptors as wires for light-driven pseudorotaxane-type molecular machines", *Chem. Eur. J.*, **4**, 2413-2422 (1998).

364- D.B. Amabilino, M. Asakawa, P.R. Ashton, R. Ballardini, V. Balzani, M. Belohradsky, A. Credi, M. Highuci, F.M. Raymo, T. Shimizu, J.F. Stoddart, M. Venturi, K. Yae: "Aggregation of self-assembling branched [n]rotaxanes", *New. J. Chem.*, **22**, 959-972 (1998).

365- P.R. Ashton, R. Ballardini, V. Balzani, I. Baxter, A. Credi, M.C.T. Fyfe, M.T. Gandolfi, M. Gomez-Lopez, M. V. Martínez-Díaz, A. Piersanti, N. Spencer, J.F. Stoddart, M. Venturi, A.J.P. White, D.J. Williams: "Acid-base controllable molecular shuttles", *J. Am. Chem. Soc.*, **120**, 11932-11942 (1998).

**Highlight:** *Scientific Computing World*, 1999, February/March, 11.

366- P.R. Ashton, R. Ballardini, V. Balzani, M.C.T. Fyfe, M.T. Gandolfi, M.V. Martínez-Díaz, M. Morosini, C. Schiavo, K. Shibata, J.F. Stoddart, A.J.P. White, D.J. Williams: "Selective self-assembly and acid-base controlled threading/dethreading of pseudorotaxanes and polypseudorotaxanes incorporating multiple recognition motifs", *Chem. Eur. J.*, **4**, 2332 (1998).

367- A. Archut, G. C. Azzellini, V. Balzani, L. De Cola, F. Vögtle: "Towards photoswitchable dendritic hosts. Interaction between azobenzene-functionalized dendrimers and eosin", *J. Am. Chem. Soc.*, **120**, 12187-12191 (1998).

368- V. Balzani, A. Credi, M.T. Gandolfi, M. Venturi e R. Ballardini; "Pseudorotaxanes, rotaxanes and catenanes as molecular level mechanical machines", *Atti della Accademia Nazionale dei Lincei*, **26** 31-43 (1999).

369- E. Ishow, A. Credi, V Balzani, F. Spadola, L Mandolini: "A Molecular-level plug/socket system. Electronic energy transfer from a binaphthyl unit incorporated into a crown ether to an anthracenyl unit linked to an ammonium ion", *Chem. Eur. J.*, **5**, 984 (1999).

370- F. Pina, M. Maestri, V. Balzani: "Photochromic flavilium compounds as miltistate/multifunction molecular-level systems", *Chem. Commun.*, 107-114 (1999).

371- M. Asakawa, P.R. Ashton, V. Balzani, C.L. Brown, A. Credi, O.A. Matthews, S.P. Newton, F.M. Raymo, A.N. Shipway, N. Spencer, A. Quick, J.F. Stoddart, J.P. White, D.J. Williams: "Photoactive azobenzene-containing supramolecular complexes and related interlocked molecular compounds", *Chem. Eur. J.*, **5**, 860 (1999).

372- M. Asakawa, P.R. Ashton, V. Balzani, S.E. Boyd, A. Credi, G. Mattersteig, S. Menzer, M. Montalti, F.M. Raymo, C. Ruffilli, J.F. Stoddart, M. Venturi, D.J. Williams: "Pseudorotaxanes and catenanes containing a redox-active unit derived from tetrathiafulvalene", *Eur. J. Org. Chem.*, 985-994 (1999).

373- P.R. Ashton, V. Balzani, J. Becher, A. Credi, M.C.T. Fyfe, G. Mattersteig, S. Menzer, M. Nielsen, F.M. Raymo, J.F. Stoddart, M. Venturi, D.J. Williams: "A three-pole supramolecular switch", *J. Am. Chem. Soc.*, **121**, 3951-3957 (1999).

**Highlight:** *Chemistry and Industry*, 1999, July 19, 559.

- 374- M. Venturi, A. Credi, V. Balzani: "Electrochemistry of coordination compounds: an extended view", *Coord. Chem. Rev.*, **185-186**, 233-256 (1999).
- 375- V. Balzani, A. Credi, M. Venturi: "Molecular-level devices", in *Supramolecular Science: where it is and where it is going*, R. Ungaro, E. Dalcanele eds.; Kluwer, Dordrecht, p. 1-22 (1999).
- 376- M. Plevoets, F. Vögtle, L. De Cola, V. Balzani: "Supramolecular dendrimers with a  $[\text{Ru}(\text{bpy})_3]^{2+}$  core and naphthyl peripheral units", *New. J. Chem.*, **23**, 63-69 (1999).
- 377- V. Balzani, A. Juris, M. Pink, M. Venturi, S. Campagna, S. Serroni: "Metallo-dendrimers with potentially useful photochemical, photophysical, and electrochemical properties", in *Conjugated polymers, oligomers, and dendrimers: from polyacetylene to DNA*, J.-L. Bredas ed., DeBoeck-Université Publisher, Bruxelles, 1999, p. 291-316.
- 378- P. Belser, S. Bernhard, C. Blum, A. Beyeler, L. De Cola, V. Balzani: "Molecular architecture in the field of photonic devices", *Coord. Chem. Rev.*, **190-192**, 155-169 (1999).
- 379- N. Armaroli, V. Balzani, J.-P. Collin, P. Gavina, J.-P. Sauvage, B. Ventura: "Rotaxanes incorporating two different coordinating units in their thread: synthesis, electrochemically and photochemically induced motions", *J. Am. Chem. Soc.*, **121**, 4397-408 (1999).
- 380- B. Schlicke, P. Belser, L. De Cola, E. Sabbioni, V. Balzani: "Photonic wires of nanometric dimensions. Electronic energy transfer in rigid rod-like  $\text{Ru}(\text{bpy})_3^{2+}(\text{ph})_n$ - $\text{Os}(\text{bpy})_3^{2+}$  compounds (ph=1,4-phenylene, n=3,5,7). *J. Am. Chem. Soc.*, **121**, 4207-4212 (1999).
- 381- V. Balzani: "Molecular Machines", in *McGraw-Hill 2000 Yearbook of Science and Technology 2000*, 259-262 (1999).
- 382- E.N. Ushakov, S.P. Gromov, O.A. Fedorova, Y.V. Pershina, M.V. Alifimov, F. Barigelletti, L. Flamigni, V. Balzani: "Sandwich-type complexes of alkaline-earth metal cations with a bisstryryl dye containing two crown ether units, *J. Phys. Chem. A*, **103**, 11188-11193 (1999).
- 383- F. Pina, M.J. Melo, P. Passaniti, M. Maestri, N. Camaioni, V. Balzani: "Photo- and pH-induced transformations of flavylum cation: "Write-lock-read-unlock-erase" cycles", *Eur. J. Org. Chem.*, 3199-3207 (1999).

- 384- P. Ceroni, A. Credi, V. Balzani, S. Campagna, G.S. Hanan, C.R. Arana, J.-M. Lehn: "Absorption and emission properties of di- and trinuclear ruthenium(II) rack-type complexes", *Eur. J. Inorg. Chem.*, 1409-1414 (1999).
- 385- F. Vögtle, M. Plevoets, M. Nieger, G.C. Azzellini, A. Credi, L. De Cola, V. De Marchis, M. Venturi, V. Balzani: "Dendrimers with a photo- and redox-active  $[\text{Ru}(\text{bpy})_3]^{2+}$ -type core. Photophysical properties, electrochemical behavior, excited-state electron-transfer reactions", *J. Am. Chem. Soc.*, **121**, 6290-6298 (1999).
- 386- D. Cardenas, J.-P. Collin, P. Gavina, J.-P. Sauvage, A. De Cian, J. Fischer, N. Armaroli, L. Flamigni, V. Vicinelli, V. Balzani: "Synthesis, X-ray structure, electrochemical and excited state properties of multicomponent complexes made of a  $[\text{Ru}(\text{bpy})_3]^{2+}$  unit covalently linked to a [2]-catenate moiety. Controlling the energy-transfer direction by changing the catenate metal ion". *J. Am. Chem. Soc.*, **121**, 5481-5488 (1999).
- 387- A. Roque, F. Pina, S. Alves, R. Ballardini, M. Maestri, V. Balzani: "Micelle effect on the write-lock-read-unlock-erase cycle of 4'-hydroxyflavylium ion", *J. Mater. Chem.*, **9**, 2265-2269 (1999).
- 388- M. Marcaccio, F. Paolucci, C. Paradisi, S. Roffia, C. Fontanesi, L.J. Yellowlees, S. Serroni, S. Campagna, G. Denti, V. Balzani: "Electrochemistry of multicomponent systems. Redox series comprising up to twentysix reversible reduction processes in polynuclear ruthenium(II) bipyridine-type complexes", *J. Am. Chem. Soc.*, **121**, 10081-10091 (1999).
- Highlight:** *Chemical and Engineering News*, 1999, November 1, 27-35.
- 389- F. Vögtle, S. Gestermann, C. Kauffmann, P. Ceroni, V. Vicinelli, L. De Cola, V. Balzani: "Poly(propylene amine) Dendrimers with Peripheral Dansyl Units. Protonation, Absorption Spectra, Photophysical Properties, Intradendrimer Quenching and Sensitization Processes", *J. Am. Chem. Soc.*, **121**, 12161-12166 (1999).
- 390- P. Beer, V. Timoshenko, M. Maestri, P. Passaniti, V. Balzani: "Anion recognition and luminescent sensing by new ruthenium(II) and rhenium(I) bipyridyl calix[4]diquinone receptors", *Chem. Commun.*, 1755-1756 (1999).
- 391- V. Balzani, S. Serroni: "Harvesting sunlight for photochemistry", *Science Spectra*, N.22, 28-37 (2000).

- 392- R. Ballardini, V. Balzani, W. Dehaen, A.E. Dell'Erba, F.M. Raymo, J.F. Stoddart, M. Venturi: "Anthracene-containing [2]rotaxanes: synthesis, spectroscopic, and electrochemical properties", *Eur. J. Org. Chem.*, 591-602 (2000).
- 393- V. Balzani, A. Credi, G. Matternsteig, O.A. Matthews, F.M. Raymo, J.F. Stoddart, M. Venturi, A.J.P. White, D.J. Williams: "Switching of pseudorotaxanes, and catenanes incorporating a tetrathiafulvalene unit by redox and chemical inputs", *J. Org. Chem.*, **65**, 1924-1936 (2000).
- Highlight:** *Nachrichten aus der Chemie*, 2000, 84(06); 746.
- 394- V. Balzani, M. Venturi: "Complessità e determinismo in Chimica", in *Complessità e Determinismo*, a cura di T. Arecchi, Armando Editore, Roma, p. 91-126, (2000).
- 395- V. Balzani, A. Credi, S.J. Langford, F. M. Raymo, J. F. Stoddart, M. Venturi: "Constructing molecular machinery: a chemically switchable [2]catenane", *J. Am. Chem. Soc.*, **122**, 3542-3543 (2000).
- Highlights:** *Science*, 2000, 288, 402; *Chemistry and Industry*, 2000, August 7, 507.
- 396- P.R. Ashton, V. Baldoni, V. Balzani, C.G. Claessens, A. Credi, H.D.A. Hoffmann, F.M. Raymo, J.F. Stoddart, M. Venturi, A.J.P. White, D.J. Williams: "Template-Directed Syntheses, Spectroscopic Properties, and Electrochemical Behavior of [n]Catenanes", *Eur. J. Org. Chem.*, 1121-1130 (2000).
- 397- V. Balzani, J. Becher, A. Credi, M.B. Nielsen, F. Raymo, J.F. Stoddart, A.M. Talarico, M. Venturi: "The electrochemically-driven decomplexation/recomplexation of inclusion adducts of ferrocene derivatives with an electron-accepting receptor", *J. Org. Chem.*, **65**, 1947-1956 (2000).
- 398- (a) V. Balzani, M. Venturi: *Chimica*, Editrice La Scuola, Brescia, pp.1-170 (2000). (b) "Programmazione della Chimica", *Nuova Secondaria*, n. 1, 89-93 (2000).
- 399- F. Pina, M.J. Melo, M. Maestri, P. Passaniti, V. Balzani: "Artificial chemical systems capable of mimicking some elementary properties of neurons", *J. Am. Chem. Soc.*, **122**, 4496-4498 (2000).
- Highlights:** *Chemical and Engineering News*, 2000, May 1, 12; *Nature*, 2000, 406, 118-120; *The Alchemist (Web)*, 2000, May 5; *Chemistry and Industry*, 2000, September 18, 613.
- 400- F. Vögtle, S. Gestermann, C. Kauffmann, P. Ceroni, V. Vicinelli, V. Balzani: "Coordination of cobalt ions in the interior of poly(propylene amine) dendrimers



- containing fluorescent dansyl units in the periphery", *J. Am. Chem. Soc.*, **122**, 10398-10404 (2000).
- 401- B. Schlicke, L. De Cola, P. Belser, V. Balzani: "Rigid Rod-like Molecular Wires of Nanometric Dimension. Electronic Energy Transfer from a Naphthyl to an Anthracenyl Unit Connected by a 1,4-Pentaphenylene Spacer", *Coord. Chem. Rev.*, **208**, 267-275 (2000).
- 402- V. Balzani, A. Credi, M. Venturi: "Molecular-level devices and machines", in *Stimulating concepts in chemistry*", M. Shibasaki, J.F. Stoddart, F. Vögtle, eds., WILEY-VCH, Weinheim, 255-266 (2000).
- 403- V. Balzani, P. Ceroni: "Bottom-up approach to nanotechnology: molecular-level machines", in *Chemistry at the Beginning of the Third Millenium - Molecular Design, Supramolecules, Nanotechnology and Beyond*, L. Fabbrizzi and A. Poggi Eds, Springer-Verlag, Heidelberg, 1-21, 2000.
- 404- S. Quici, A. Manfredi, M. Maestri, I. Manet, P. Passaniti, V. Balzani: "Synthesis and photophysical properties of polyzacrown ethers with appended naphthyl or anthracenyl units", *Eur. J. Org. Chem.*, 2041-2046 (2000).
- 405- V. Balzani, M. Venturi: "La Chimica del vivere quotidiano", *La Nuova Secondaria*, N. 2, **18**, 49-61 (2000).
- 406- V. Balzani, R. Ballardini, A. Credi, M. T. Gandolfi, M. Venturi: "Molecular-Level Devices and Machines", *Chimica e Industria*, **82**, 397-404 (2000).
- 407- V. Balzani, P. Ceroni, S. Gestermann, C. Kauffmann, M. Gorka, F. Vögtle: "Dendrimers as Fluorescent Sensors with Signal Amplification", *Chem. Commun.*, 853-854 (2000).
- Highlights:** *The Alchemist* (Web), 2000, issue 8, 3; *Nature Science Update*, 2000, June 2.
- 408- P.R. Ashton, R. Ballardini, V. Balzani, A. Credi, R. Dress, E. Ishow, C.J. Kleverlann, O. Kocian, J.A. Preece, N. Spencer, J.F. Stoddart, M. Venturi, S. Wenger: "A photochemically driven molecular-level abacus", *Chem. Eur. J.*, **6**, 3558-3574 (2000).
- 409- V. Balzani, A. Credi, F.M. Raymo, J.F. Stoddart: "Artificial Molecular Machines", *Angew. Chem. Int. Ed.*, **39**, 3348-3391 (2000).
- Highlight:** *The Alchemist* (Web), 2000, November 10.
- 410- V. Balzani, P. Ceroni, S. Gestermann, M. Gorka, C. Kauffmann, F. Vögtle: "Effect of Protons and Metal Ions on the Fluorescence Properties of a Polylysin

- Dendrimer Containing Twenty Four Dansyl Units”, *J. Chem. Soc., Dalton Trans.*, 3765-3771 (2000).
- 411- R. Ballardini, V. Balzani, J. Becher, A. Di Fabio, M.T. Gandolfi, G. Mattersteig, M.B. Nielsen, F. Raymo, S.J. Rowan, J.F. Stoddart, A.J.P. White, D.J. Williams: "Tetrathiafulvalene-naphthalene cyclophanes: planar chirality and cis/trans photoisomerization," *J. Org. Chem.*, **65**, 4120-4126 (2000).
- 412- V. Balzani, P. Ceroni, S. Gestermann, M. Gorka, C. Kauffmann, M. Maestri, F. Vögtle: "Eosin molecules hosted into a dendrimer which carries thirty-two dansyl units in the periphery. A photophysical study", *ChemPhysChem*, 224-227 (2000).
- 413- V. Balzani, M. Venturi: "Dall'atomo all'Uomo: Determinismo, diversità, complessità", in *Scienza e Conoscenza; verso un nuovo umanesimo*, a cura di F. Facchini, Editrice Compositori, Bologna (Italy), 87-100 (2000).
- 414- V. Balzani, P. Ceroni, A. Credi, M. Gomez-Lopez, C. Hamers, J.F. Stoddart, R. Wolf: "Controlled dethreading/rethreading of a scorpion-like pseudorotaxane and a related macrobicyclic self-complexing system", *New J. Chem.*, **25**, 25-31 (2001).
- 415- V. Balzani, A. Juris : "Photochemistry and photophysics of Ru(II)-polypyridine complexes in the Bologna group. From early studies to recent developments", *Coord. Chem. Rev.*, **211**, 97-115 (2001).
- 416- V. Balzani Ed., Handbook on **Electron Transfer in Chemistry**, WILEY-VCH, five volumes (2001).
- 417- M. Venturi, A. Credi, V. Balzani: "Electron-Transfer Processes in Pseudorotaxanes", in *Handbook on Electron Transfer in Chemistry*, V. Balzani Ed., WILEY-VCH vol. 3, 501-538 (2001).
- 418- R. Ballardini, M. T. Gandolfi, V. Balzani: "Electron-Transfer Processes in Rotaxanes and Catenanes", in *Handbook on Electron Transfer in Chemistry*, V. Balzani Ed., WILEY-VCH, vol. 3, 539-581 (2001).
- 419- R. Ballardini, V. Balzani, A. Di Fabio, M.T. Gandolfi, J. Becher, J. Lau, M.B. Nielsen, J.F. Stoddart: "Macrocycles, Pseudorotaxanes and Catenanes Containing a Pyrrolo-Tetrathiafulvalene Unit. Absorption Spectra, Luminescence Properties, Redox Behaviour", *New J. Chem.*, **25**, 293-298 (2001).
- 420- A. Juris, M. Venturi, P. Ceroni, V. Balzani, S. Campagna, S. Serroni "Dendrimers based on Electroactive metal complexes. A Review of Recent Advances", *Collection of Czechoslovak Chem. Commun.*, **66**, 1-32 (2001)

- 421- V. Balzani: "From the Photochemistry of Coordination Compounds to Molecular-level Devices and Machines", *European Photochemistry Association Newsletter*, N. 71, 7-20, (2001).
- 422- R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, M. Venturi: "Artificial Molecular-Level Machines: Which Energy to Make Them Work?" *Acc. Chem. Res.*, **34**, 445-455 (2001).
- 423- P. Ceroni, V. Vicinelli, M. Maestri, V. Balzani, W.M. Müller, U. Müller, U. Hahn, F. Osswald and F. Vögtle: "Dendrimers with a 4,4'-Bipyridinium Core and Electron-donor Branches. Electrochemical and Spectroscopic Properties", *New Journal of Chemistry*, **25**, 989-993 (2001).
- 424- M. Maestri, F. Pina, V. Balzani: "Multistate/multifunctional molecular-level systems. Photochromic Flavilium Compounds", in *Molecular Switches*, B.L. Feringa ed., Wiley-VCH, Weinheim, p. 309-338, 2001.
- 425- V. Balzani, A. Credi, S.J. Langford, A. Prodi, J.F. Stoddart, M. Venturi: "Spectroscopic and electrochemical properties of catenanes containing the 2,7-diazapyrenium unit", *Supramolecular Chemistry*, **13**, 303-311 (2001).
- 426- R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, M. Venturi: "Molecular-Level Machines Based on Photoinduced Electron Transfer Processes", *Structure and Bonding*, **99**, 163-188 (2001).
- 427- R. Ballardini, V. Balzani, A. Credi, M. T. Gandolfi, M. Venturi: "Artificial molecular-level machines with  $[\text{Ru}(\text{bpy})_3]^{2+}$  as a light-fueled motor", *International Journal of Photoenergy*, **3**, 63-77 (2001).
- 428- R. Ashton, V. Baldoni, V. Balzani, A. Credi, H. D. A. Hoffmann, M.-V. Martinez-Diaz, F. M. Raymo, J. F. Stoddart, M. Venturi: "Dual Mode 'Co-conformational' Switching in Catenanes Incorporating Bipyridinium and Dialkylammonium Recognition Sites", *Chem. Eur. J.*, **7**, 3482-3493 (2001).
- 429- V. Balzani, A. Credi, F. Marchioni, J. F. Stoddart "Artificial Molecular-Level Machines. Dethreading/rethreading of a Pseudorotaxane Powered Exclusively by Light Energy", *Chem. Commun.*, 1860-1861 (2001).
- 430- V. Balzani, P. Ceroni, A. Juris, M. Venturi, S. Campagna, F. Puntotiero, S. Serroni: "Dendrimers based on Photoactive Metal Complexes. Recent Advances", *Coord. Chem. Rev.*, **219**, 545-572 (2001).
- 431- V. Balzani, A. Credi: "Artificial Molecular-level Machines", *The Chemical Record*, 422-435 (2001).

- 432- F. Vögtle, M. Gorka, V. Vicinelli, P. Ceroni, M. Maestri, V. Balzani: "A dendritic antenna for near-infrared emission of Nd<sup>3+</sup> ions", *ChemPhysChem*, 769-773 (2001).
- 433- V. Balzani, M. Venturi: "Le nanomacchine", in *L'uomo e le macchine*, collana La Nuova Scienza, Scheiwiller, Milano, vol. 2, 153-163 (2001)
- 434- F. Vögtle, M. Gorka, R. Hesse, P. Ceroni, M. Maestri, V. Balzani: "Photochemical and Photophysical Properties of Poly(propylene amine) Dendrimers with Peripheral Naphthalene and Azobenzene Groups", *Photochem. Photobiol. Sci.*, **1**, 45-51 (2002).
- 435- V. Balzani, P. Ceroni, S. Gestermann, M. Gorka, C. Kauffmann, F. Vögtle: "Fluorescent Guests Hosted in Fluorescent Dendrimers", *Tetrahedron*, **58**, 629-637 (2002).
- 436- P. Ceroni, I. Laghi, M. Maestri, V. Balzani, S. Gestermann, M. Gorka, F. Vögtle: "Photochemical, Photophysical and Electrochemical Properties of Six Dansyl-based Dyads", *New J. Chem.*, **26**, 66-75 (2002).
- 437- P. R. Ashton, V. Balzani, M. Clemente-Leon, B. Colonna, A. Credi, N. Jayaraman, F. M. Raymo, J. F. Stoddart, M. Venturi: "Ferrocene-Containing Carbohydrate Dendrimers", *Chem. Eur. J.*, **8**, 673-684 (2002).
- 438- M. Pink, P. Sutra, V. Balzani, M. Venturi, S. Campagna, S. Serroni, A. Juris: "Structure and reactivity of [Ru(2,3-Medpp)<sub>2</sub>Cl<sub>2</sub>]<sup>2+</sup>", *Inorg. Chim. Acta*, **333**, 25-31 (2002).
- 439- V. Balzani, A. Credi, M. Venturi: "Nanomacchine azionate dalla luce", *Le Scienze*, Nro 11, 83-87 (2002).
- 440- V. Balzani, M. Venturi, "La Chimica del Futuro: Dispositivi e Macchine a Livello Molecolare", *Accademia Nazionale dei Lincei, Collana Fondazione "Guido Donegani"*, **29**, 19-43 (2002).
- 441- V. Balzani, A. Credi, M. Venturi: "Controlled Disassembling of Self-Assembling Systems. Towards Molecular Level Devices and Machines", *Proc. Natl. Acad. Sci.*, **99**, 4814-4817 (2002).
- 442- S. Serroni, S. Campagna, F. Puntoriero, A. Juris, G. Denti, V. Balzani, M. Venturi: "A luminescent decanuclear Ruthenium(II) polypyridine complex: A convergent approach to a dendritic structure employing the 'complexes as metals/complexes as ligands' synthetic strategy" *Inorganic Synthesis*, D. Coucouvanis Ed., **33**, 10 -18 (2002).

- 443- V. Vicinelli, P. Ceroni, M. Maestri, V. Balzani, M. Gorka, F. Vögtle: "Luminescent Lanthanide Ions Hosted in a Fluorescent Polylysin Dendrimer. Antenna-like Sensitization of Visible and Near-infrared Emission", *J. Am. Chem. Soc.*, **124**, 6461-6468 (2002).
- 444- H.B. Baudin, J. Davidsson, S. Serroni, A. Juris, V. Balzani, S. Campagna, L. Hammarstrom: "Ultrafast energy transfer in binuclear ruthenium-osmium complexes as models for light-harvesting antennas," *J. Phys. Chem. A*, **106** 4312-4319 (2002).
- 445- R. Ballardini, V. Balzani, M. Clemente-León, A. Credi, M. T. Gandolfi, E. Ishow, J. Perkins, J. F. Stoddart, H.-R. Tseng, S. Wenger: "Photoinduced Electron Transfer in a Triad that can be Assembled/Disassembled by Two Different External Inputs. Toward Molecular-Level Electrical Extension Cables", *J. Am. Chem. Soc.*, **124**, 12786-12795 (2002).
- Highlights:** *The Alchemist* (Web), **2002**, October 4; *Chemical and Engineering News*, **2002**, October 21, p. 17. *Nature Materials*, **2002**, 1 (November) , 142.
- 446- U. Hahn, M. Gorka, F. Vögtle, V. Vicinelli, P. Ceroni, M. Maestri, V. Balzani: "Light Harvesting Dendrimers. Efficient Intra- and Inter-Molecular Energy-Transfer Processes in a Species containing Sixtyfive Chromophoric Groups of Four Different Types", *Angew. Chem. Int. Ed.*, **41**, 3595-3598 (2002).
- 447- V. Balzani: "Il mistero dell'Acqua", *KOS*, **203-204**, 28-33 (2002)
- 448- A. Roque, C. Lodeiro, F. Pina, M. Maestri, R. Ballardini, V. Balzani: "Photochromic properties of 3-Methyl Substituted Flavylum Salts", *Eur. J. Org. Chem.*, 2699-2709 (2002).
- 449- M. Marcaccio, F. Paolucci, C. Paradisi, M. Carano, S. Roffia, C. Fontanesi, L.J. Yellowlees, S. Serroni, S. Campagna, V. Balzani: "Electrochemistry and Spectroelectrochemistry of Ruthenium(II)-bipyridine Building blocks. Different Behaviour of the 2,3- and 2,5-bis(2-pyridyl)pyrazine Bridging Ligands", *J. Electroanal. Chem.* **532**, 99-112 (2002).
- 450- V. Balzani, A. Credi, M. Venturi: "The Bottom-up Approach to Molecular-Level Devices and Machines", *Chem. Eur. J.*, **8**, 5524-5532 (2002). Italian translation: *La Chimica e L'Industria*, **85**, 55-58; 61-65 (2003).
- 451- V. Balzani, A. Credi, M. Venturi: "**Molecular Devices and Machines. A Journey into the Nano World**", Wiley-VCH, Weinheim, pp. 1-488 (2003).

- 452- V. Balzani, A. Credi, M. Venturi: "Molecular Logic Circuits", *ChemPhysChem*, **3**, 49-59 (2003).
- 453- V. Balzani, A. Credi, M. Venturi, A. Di Fabio: "Extreme Miniaturization: Molecular-Level Devices and Machines", in *Molecular Electronics: Biosensors and Biocomputer*, L. Barsanti, et al. Eds., Kluwer, Dordrecht, 29-41 (2003).
- 454- V. Balzani: "La fotochimica e la fotosintesi artificiale", *Newsletter ISES*, Anno X, n.ro 1, p.12-13.
- 455- M. Venturi, V. Balzani: "La Chimica dall'Atomo all'Uomo", *Accademia Nazionale dei Lincei, Collana Fondazione "Guido Donegani"*, **30**, 27-40 (2003).
- 456- C. Saudan, V. Balzani, M. Gorka, S-K. Lee, M. Maestri, V. Vicinelli, F. Vögtle: "Dendrimers as Ligands. Formation of a 2:1 Luminescent Complex between a Dendrimer with 1,4,8,11-Tetraazacyclotetra-decane (Cyclam) Core and  $Zn^{2+}$ ", *J. Am. Chem. Soc.*, **125**, 4424-4425 (2003).
- 457- J.O. Jeppesen, K.A. Nielsen, J. Perkins, S.A. Vignon, A. Di Fabio, R. Ballardini, M.T. Gandolfi, M. Venturi, V. Balzani, J. Becher, J.F. Stoddart: "Amphiphilic Bistable rotaxanes", *Chem. Eur. J.*, **9**, 2982-3007 (2003).
- 458- V. Balzani: "Photochemical Molecular Devices", *Photochem. Photobiol. Sci.*, **2**, 459-476 (2003).
- 459- V. Balzani, A. Credi, M. Venturi: "Light-Powered Molecular Scale Machines", *Pure Appl. Chem.*, **75**, 541-547 (2003).
- 460- C. Saudan, V. Balzani, P. Ceroni, M. Gorka, M. Maestri, V. Vicinelli, F. Vögtle: "Dendrimers with a Cyclam Core. Absorption Spectra, Multiple Luminescence, and Effect of Protonation", *Tetrahedron*, **59**, 3845-3852 (2003).
- 461 - T. Yamamoto, H.-R. Tseng, J. F. Stoddart, V. Balzani, A. Credi, F. Marchioni, M. Venturi, "Redox-induced ring-shuttling and evidence for folded structures in long and flexible two-station rotaxanes", *Collection Czech, Chem. Commun.*, **68**, 1488-1514 (2003).
- 462- P. Ceroni, V. Vicinelli, M. Maestri, V. Balzani, M. Gorka, S.-K. Lee, P. Dragut, F. Vögtle: "Poly(propylene amine) Dendrimers Decorated with Dimethoxybenzene Units. Photophysical and Electrochemical Properties" *Collection Czech, Chem. Commun.*, **68**, 1541-1554 (2003).
- 463- A. Roque, C. Lodeiro, F. Pina, M. Maestri, S. Dumas, P. Passaniti, V. Balzani: "Multistate/multifunctional Systems. A Thermodynamic, Kinetic, and Photochemical

- Investigation on the 4'-Dimethylaminoflavylium Compound", *J. Am. Chem. Soc.*, **125**, 987-994 (2003).
- 464- V. Balzani, P. Ceroni, M. Maestri, C. Saudan, V. Vicinelli: "Luminescent Dendrimers. Recent Advances", *Topics Curr. Chem.*, **228**, 159-191 (2003).
- 465- V. Balzani, A. Credi, M. T. Gandolfi, M. Venturi, Roberto Ballardini: "Un futuro per la luminescenza: la fotonica molecolare", *La Chimica e l'Industria*, **85**, 53-58 (2003).
- 466- F. Pina, M. Maestri, V. Balzani: "Photochromic Systems Based on Synthetic Flavylium Compounds and their Potential Use as Molecular-level Memory Elements", *Handbook of Photochemistry and Photobiology*, H.S. Nalwa, ed., volume 3, American Scientific Publishers, Ca, USA, 412-450 (2003).
- 467- M. Venturi, F. Marchioni, V. Balzani, D.M. Opris, O. Henze, A.D. Schlüter, "A Photophysical and Electrochemical Investigation on a Phenylacetylene Macrocycle Containing Two 2,2'-Bipyridine Units, its Protonated forms, and Ru(II) and Os(II) Complexes, *Eur. J. Org. Chem.*, 4227-4233 (2003).
- 468- V. Balzani, R. Ballardini, A. Credi, M. T. Gandolfi, M. Venturi, "Natural and Artificial Molecular Machines for Linear Movements", in *Ricordo di Alessandro Bertoluzza*, CLUEB, Bologna, 49-60 (2003).
- 469- V. Balzani, F. Vögtle: "Dendrimers as Luminescent Hosts for Metal Cations and Organic Molecules", *Comp. Rend. Chimie*, **6**, 867-872 (2003).
- 470- V. Balzani, P. Ceroni, A. Credi, M. Maestri, M. Venturi: "Photochemionic Devices", *Kemija u industriji*, **52**, 535-543 (2003).
- 471- V. Balzani, P. Ceroni, M. Maestri, V. Vicinelli, "Light Harvesting Dendrimers", *Curr. Opinion Chem. Biol.*, **7**, 657-665 (2003).
- 472- M. Álvaro, B. Ferrer, H. García, E. J. Palomares, V. Balzani, A. Credi, M. Venturi, J. F. Stoddart, S. Wenger: "Photochemistry of a Dumbbell-Shaped Multicomponent System Hosted Inside the Mesopores of Al/MCM-41 Aluminosilicate. Generation of Long-Lived Viologen Radicals", *J. Phys. Chem, B*, **107**, 14319-14325 (2003).
- 473- V. Balzani, M. Clemente-León, A. Credi, J. N. Lowe, J.D. Badjic, J. F. Stoddart, D.J. Williams: "Controlling Multivalent Interactions in Triply-Threaded Two-Component Superbundles", *Chem. Eur. J.*, **9**, 5348-5360 (2003).
- 474- V. Balzani, P. Ceroni, M. Maestri: "Luminescent Dendrimers", in *Kirk-Othmer Encyclopedia of Chemical Technology*, 2003 John Wiley & Sons, Arza Seidel Ed., Wiley, Hoboken (N.J.,USA), Article Online Posting Date: October 17, 2003.

- 475- M. Venturi, V. Balzani, R. Ballardini, A. Credi, M. T. Gandolfi: "Towards Molecular Photochemionics", *Intern. J. Photoenergy*, **6**, 1, 2004.
- 476- M. C. Moncada, F. Pina, A. Roque, A. J. Parola, M. Maestri, V. Balzani: "Tuning the Photochromic Properties of a Flavylum Compound by pH", *Eur. J. Org. Chem.*, 304-312 (2004).
- 477- F. Marchioni, M. Venturi, A. Credi, V. Balzani, M. Belohradsky, A.M. Elizarov, H-R. Tseng, J.F. Stoddart: "Polyvalent Scaffolds. Counting the Number of Seats Available for Eosin Guest Molecules in Viologen-Based Dendrimers", *J. Am. Chem. Soc.*, **126**, 568-573 (2004).
- 478- C. Saudan, V. Balzani, M. Gorka, S-K. Lee, J. van Heyst, M. Maestri, P. Ceroni, V. Vicinelli, F. Vögtle: "Dendrimers as Ligands. An Investigation into the Stability and Kinetics of Zn<sup>2+</sup> Complexation by Dendrimers with 1,4,8,11-Tetraazacyclotetradecane (Cyclam) Core", *Chem. Eur. J.*, **10**, 899-905 (2004).
- 479- F. Pina, P. Passaniti, M. Maestri, V. Balzani, F. Voegtle, M. Gorka, S.K. Lee, J. van Heyst, H. Fakhrnabavi: "Ground and Excited-State Electronic Interactions in Poly(propylene amine) Dendrimers Functionalized with Naphthyl Units: Effect of Protonation and Metal Complexation", *ChemPhysChem*, **5**, 473-480 (2004).
- 480- M.C. Moncada, A.J. Parola, C. Lodeiro, F. Pina, M. Maestri, V. Balzani: "Multistate/Multifunctional Behaviour of 4'-Hydroxy-6-nitroflavylum: a Write-Lock/Read/Unlock/Enable-Erase Cycle Driven by Light and pH stimulation", *Chem. Eur. J.*, **10**, 1519-1526 (2004).
- 481- H.-R. Tseng, S. A. Vignon, P. C. Celestre, J. Perkins, J.O. Jeppesen, A. Di Fabio, R. Ballardini, M. T. Gandolfi, M. Venturi, V. Balzani, J. F. Stoddart: "Redox-Controllable Amphiphilic [2]Rotaxanes", *Chem. Eur. J.*, **10**, 155-172 (2004).
- 482- J.D. Badji, V. Balzani, A. Credi, S. Silvi, J. F. Stoddart: "A Molecular Elevator", *Science*, **303**, 1845-1848 (2004).
- Highlights:** *The Alchemist* (Web), **2004**, March 19; *Chemical and Engineering News*, **2004**, March 22.
- 483- G. Bergamini, P. Ceroni, V. Balzani, F. Vögtle, S.-K. Lee: "Designing Systems for a Multiple Use of Light Signals", *ChemPhysChem*, **5**, 315-320 (2004).
- 484- J.D. Badji, V. Balzani, A. Credi, J.N. Lowe, S. Silvi, J.F. Stoddart: "A Mechanically Interlocked Bundle", *Chem. Eur. J.*, **10**, 1926-1935 (2004).



- 485- C. Saudan, P. Ceroni, V. Vicinelli, M. Maestri, V. Balzani, M. Gorka, S.-K. Lee, J. van Heyst, F. Vögtle: "Cyclam-based Dendrimers as Ligands for Lanthanide Ions", *Dalton Trans.*, 1597-1600 (2004).
486. V. Balzani, M. Venturi: "Dispositivi e macchine molecolari", in *Storia della Scienza*, Istituto della Enciclopedia Italiana, volume IX, 393-404 (2001-2004).
- 487- V. Balzani, A. Credi: "Molecular Level Machines", *Encyclopedia of Supramolecular Chemistry*, 931-938 (2004).
- 488- V. Balzani, A. Credi, F. Marchioni, S. Silvi, M. Venturi: "Molecular Nanotechnology. Towards Artificial Molecular Machines and Motors", in *Emerging Applications of Radiation in Nanotechnology*, IAEA Press, Vienna, 17-26 (2004)
- 489- V. Vicinelli, P. Ceroni, M. Maestri, M.C. Lazzari, V. Balzani, S.-K. Lee, J. van Heyst, F. Vögtle: "Photochemical and photophysical properties of a poly(propylene amine) dendrimer functionalized with *E*-stilbene units", *Org. Biomol. Chem.*, **2**, 2207-2213 (2004).
- 490- G. Bergamini, P. Ceroni, M. Maestri, V. Balzani, S.-K. Lee, F. Vögtle: "Forward (singlet-singlet) and backward (triplet-triplet) energy transfer in a dendrimer with peripheral naphthalene units and a benzophenone core", *Photochem. Photobiol. Sci.*, **3**, 898-905 (2004).
- 491- V. Balzani, A. Credi, F. Marchioni, S. Silvi, M. Venturi: "Artificial molecular machines and motors", *Newsletter Nanotec It*, N.1, 21-27 (2004).
492. M. Venturi, S. Dumas, V. Balzani, J. Cao, J.F. Stoddart: "Threading/dethreading processes in pseudorotaxanes. A thermodynamic and kinetic study". *New J. Chem.*, **28**, 1032-1037 (2004).
493. V. Balzani, A. Credi, M. Venturi: "Molecular Devices and Machines", *Physics World*, 39-42, no. 11, (2004).
494. V. Balzani, P. Ceroni, B. Ferrer: "Molecular Devices", *Pure Appl. Chem.* **76**, 1887-1901 (2004).
- 495- P. Ceroni, V. Vicinelli, M. Maestri, V. Balzani, S.-k. Lee, J van Heyst, M. Gorka, F. Vögtle: "Luminescent Dendrimers as Ligands for Metal Ions", *J. Organomet. Chem.*, **698**, 4375-4383 (2004).
- 496- V. Balzani, A. Credi, M. Venturi: "Perchè la Chimica è importante, utile e bella", *Il Chimico Italiano*, N. 3, 13-20 (2004).

- 497- G. Bergamini, C. Saudan, P. Ceroni, M. Maestri, V. Balzani, M. Gorka, S.-K. Lee, J. van Heyst, F. Vögtle: "Proton-Driven Self-Assembled Systems Based on Cyclam-Cored Dendrimers and  $[\text{Ru}(\text{bpy})(\text{CN})_4]^{2-}$ ", *J. Am. Chem. Soc.*, **126**, 16466-16471 (2004).
- 498- F. Marchioni, M. Venturi, P. Ceroni, V. Balzani, M. Belohradsky, A.M. Elizarov, H.-R. Tseng, J.F. Stoddart: "Complete charge pooling is prevented in viologen-based dendrimers by self-protection" *Chem. Eur. J.*, **10**, 6361-6368 (2004).
- 499- T. Iijima, S.A. Vignon, H.-R. Tseng, T. Jarrosson, J.K. Sanders, F. Marchioni, M. Venturi, E. Apostoli, V. Balzani, J.F. Stoddart: "Redox-controllable Donor-Acceptor Neutral [2]Rotaxanes", *Chem. Eur. J.*, **10**, 6375-6392 (2004).
- 500- N. Armaroli, V. Balzani: "Energia Oggi e Domani. Prospettive, sfide, speranze", Bononia University Press, p. 1-188 (2004).
- 501- V. Balzani, A. Credi, M. Venturi, "Macchine molecolari", *Enciclopedia del Novecento, Istituto dell'Enciclopedia Italiana*, supplemento III, p. 99-110 (2004).
- 502- A. Credi, R. Ballardini, V. Balzani, B. Ferrer, M.T. Gandolfi, S. Silvi, M. Venturi: "Rotaxane- and catenane-based molecular machines and motors", in *Foundations of Nanoscience*, J. Reif, Ed., *Science Technica*, 240 (2004).
- 503- V. Balzani, A. Credi, M. Venturi: "Dalle molecole ai sistemi supramolecolari. Dispositivi e macchine di dimensione nanometrica" *La Nuova Civiltà delle Macchine*, **4**, 30 (2004).
- 504- F. Scandola, V. Balzani: "Le strutture supramolecolari", *Enciclopedia della Scienza, La Materia*, Motta Editore, **11 (2)**, 545-581 (2005).
- 505- M. Venturi, V. Balzani, F. Marchioni, D.M. Opris, P. Franke, A.D. Schlüter: "Ru(II) and Os(II) complexes of a shape-persistent macrocyclic ligand: synthesis, photophysical properties, and electrochemical characterization", in *Macrocyclic Chemistry: Current Trends and Future*, Kluwer Academic Publishers, Dordrecht, 219-234 (2005).
- 506- V. Balzani, A. Credi, M. Venturi: "Le nanomacchine" in *80° Anniversario 1923-2003 Celebrazioni per la fondazione del Liceo Scientifico Augusto Righi in Bologna*, Edizioni Pendragon, Bologna, 74-80 (2005).

- 507- V. Balzani: "Nanoscience and Nanotechnology. A Personal View of a Chemist". *Small*, **1**, 278-283 (2005).
- 508- V. Balzani: "Embrioni, etica e libertà di ricerca", *Le Scienze*, **439**, 18-19 (2005).
- 509- P. Ceroni, G. Bergamini, F. Marchioni, V. Balzani: "Luminescence as a tool to investigate dendrimer properties", *Progress in Polymer Science*, **30**, 453-473 (2005).
- 510- G. Bergamini, P. Ceroni, V. Balzani, L. Cornelissen, J. van Heyst, S-K Lee, F. Vögtle: "Dendrimers based on a bis-Cyclam Core as Fluorescence Sensors for Metal Ions", *Journal of Materials Chemistry*, **15**, 2959-2964 (2005).
- 511- V. Balzani, A. Credi, B. Ferrer, S. Silvi, M. Venturi: "Artificial molecular motors and machines: design, principles, and prototype systems", *Topics Curr. Chem.*, **262**, 1-27 (2005).
- 512- V. Balzani, M. Venturi: "Le molecole", *La Scienza*, UTET, **12**, 443-475 (2005).
- 513- V. Balzani, A. Credi: "Le machine molecolari", *La Scienza*, UTET, **12**, 463-496 (2005).
- 514- M. Venturi, V. Balzani, M.T. Gandolfi: "Fuels from solar energy. A dream of Giacomo Ciamician, the father of Photochemistry", in *Proceedings of 2005 Solar World Congress Bringing Water to the World*, Eds. D.Y. Goswami, S. Vijayaraghavan, R. Campbell-Howe, ASES, Boulder, USA (2005).
- 515- V. Balzani, P. Ceroni, C. Giansante, V. Vicinelli, F.-G. Klärner, C. Verhaelen, F. Vögtle, U. Hahn: "Tweezering the Core of a Dendrimer: A Photophysical and Electrochemical Study", *Angew. Chem. Int. Ed.* **44**, 4574-4578 (2005).
- 516- V. Balzani: "Le nuove frontiere della miniaturizzazione", *Le Garzantine Scienze*, 999 (2005).
- 517- V. Balzani: "Ricerca ed Emergenze Planetarie", *Le Scienze dell'Uomo, I Quaderni*, Editoriale Il Ponte, **n. 6**, 23-30 (2005)
- 518- V. Balzani: *Review of the book "What is What in Nanochemistry"* by V.E.Borisenko and S. Ossicini, *Advanced Materials*, **17**, 2019-2020 (2005).
- 519- V. Balzani, A. Credi, M. Venturi: "Macchine molecolari" , in *Enciclopedia del Novecento, Suppl. III, Istituto della Enciclopedia Italiana Giovanni Treccani*, Roma, vol. XIII, 99-110 (2004).
- 520- N. Armaroli, V. Balzani: "Gli schiavi energetici", *KOS*, n. 243, 22-27, dicembre 2005.

- 521- M. Venturi, F. Marchioni, B. Ferrer Ribera, V. Balzani, D.M. Opris, A.D. Schlüter: “Photoinduced energy- and electron-transfer processes in dinuclear Ru(II)-Os(II), Ru(II)-Os(III), and Ru(III)-Os(II) trisbipyridine complexes containing a shape-persistent macrocyclic spacer”, *ChemPhysChem*, **7**, 229-239 (2006).
- 522- V. Balzani, H. Bandmann, P. Ceroni, C. Giansante, U. Hahn, F.-G. Klärner, U. Müller, W. M. Müller, C. Verhaelen, V. Vicinelli, F.Vögtle: “Host-Guest Complexes between an Aromatic Molecular Tweezer and Symmetric and Unsymmetric Dendrimers with a 4,4'-Bipyridinium Core”, *J. Am. Chem. Soc.*, **128**, 637-648 (2006).
- 523- V. Balzani, M. Clemente-León, A. Credi, B. Ferrer, M. Venturi, A. H. Flood, J. F. Stoddart: “Autonomous Artificial Nanomotor Powered by Sunlight”, *Proc. Natl. Acad. Sci.*, **103**, 1178-1183 (2006).
- Highlights:** *Chemical and Engineering News*, **2006**, January 30; *Nature*, **440**, 16 March 2006, p. 286; *Nature materials*, **5**, March 2006, p. 165; *Small*,
- 524- V. Balzani: “Transition Metal complexes”, in *Handbook of Photochemistry, Third Edition*, M. Montalti, et al. Ed., CCR, Taylor and Francis, New York, 49-82 (2006).
- 525- V. Balzani: Review of the book “Nanochemistry. A Chemical Approach to Nanomaterials”, by G.A. Ozin and A.C. Arsenault, *Small*, **2**, 678-679 (2006).
- 526- V. Balzani, M.Clemente-Leon, A. Credi, M. Semeraro, M. Venturi, H-R. Tseng, S. Wegner, S. Saha, J.F. Stoddart: “A Comparison of Shuttling Mechanisms in Two Constitutionally Isomeric Bistable Rotaxane-Based Sunlight-Powered Nanomotors”, *Aust. J. Chem.*, **59**, 193-206 (2006).
- 527- V. Balzani, G. Bergamini, F. Marchioni, P. Ceroni: “Ru(II)-bipyridine Complexes in Supramolecular Systems, Devices and Machines”, *Coord. Chem.. Rev.*, **250**, 1254-1266 (2006).
- 528- J. D. Badjic, C. M. Ronconi, A. H. Flood, J. F. Stoddart, V. Balzani, S. Silvi, A. Credi: "Operating Molecular Elevators", *J. Am. Chem. Soc.*, **128**, 1489-1499 (2006).
- 529- P. Passaniti, P. Ceroni, V. Balzani, O. Lukin, A. Yoneva, F. Vögtle: “Amide-based Molecular Knots as Platforms for Fluorescent Switches”, *Eur. J. Chem.*, **12**, 5685-5690 (2006).
- 530- G. Bergamini, P. Ceroni, V. Balzani, M. Del Mar Villavieja, R. Kandre, I. Zhun, O. Lukin: “A photophysical study of terphenyl core oligosulfonimide dendrimers exhibiting high steady-state anisotropy”, *ChemPhysChem* **7**, 1980-1984 (2006).

- 531- G. M. L. Consoli, C. Geraci, P. Neri, G. Bergamini, V. Balzani: "Azobenzene-bridged calix[8]arenes", *Tetrahedron Letters*, **47**, 7809-7813 (2006).
- 532- N. Armaroli, V. Balzani: "La crisi energetica: sfide ed opportunità". *La Chimica e l'Industria*, **88**, n. 7, 66-70 (2006).
- 533- V. Balzani, A. Credi, S. Silvi, M. Venturi: "Artificial nanomachines based on interlocked molecular species: recent advances", *Chemical Society Reviews*, **35**, 1135-1149 (2006).
- 534- V. Balzani: Review of the book "The Nanotech Pioneers. Where Are They Taking Us?" by Steven A. Edwards, *Angew. Chem. Int Ed.*, **45**, 7115-7117 (2006).
- 535- B. Ferrer, G. Rogez, A. Credi, R. Ballardini, M.T. Gandolfi, V. Balzani, Y. Liu, H-R-Tseng, J.F. Stoddart: "Photoinduced electron flow in a self-assembling supramolecular extension cable", *Proc. Natl. Acad. Sci. USA*, **103**, 18411-18416 (2006).
- 536- B. Branchi, P. Ceroni, G. Bergamini, V. Balzani, M. Maestri, J. van Heyst, S.-K. Lee, F. Luppertz, F. Vögtle: "A Cyclam Core Dendrimer Containing Dansyl and Oligoethylene Glycol Chains in the Branches: Protonation and Metal Coordination", *Chem. Eur. J.*, **12**, 8926-8934 (2006).
- 537- N. Armaroli, V. Balzani: "The future of energy supplies: challenges and opportunities", *Angew. Chem. Int Ed.*, **46**, 52-66 (2007).
- 538- V. Balzani, G. Bergamini, P. Ceroni, F. Vögtle: "Electronic Spectroscopy of Metal Complexes with Dendritic Ligands", *Coord. Chem. Rev.*, **251**, 525-535 (2007).
- 539- V. Balzani, A. Credi, M. Venturi: "Molecular devices and machines", *Nanotoday*, **2(2)**, 18-25 (2007).
540. V. Balzani: "Le molecole: parole delle cose", in *I Classsici e la Scienza. Gli antichi, i moderni, noi*. A cura di I. Dionigi, BUR, p. 120-145 (2007).
541. R. Ballardini, P. Ceroni, A. Credi, M.T. Gandolfi, M. Maestri, M. Semeraro, M. Venturi, V. Balzani, "Molecular photochemionics", *Adv. Funct. Mat.*, **17**, 740-750 (2007).
542. G. Rogez, B. Ferrer Ribeira, A. Credi, R. Ballardini, M.T. Gandolfi, V. Balzani, Y. Liu, J.F. Stoddart: "A Molecular Plug-Socket Connector", *J. Am. Chem. Soc.*, **129**, 4633 (2007).

543. C. Giansante, P. Ceroni, V. Balzani, M. Maestri, S.-K. Lee, F. Vögtle: "Photophysical, Photochemical, and Electrochemical Properties of Dendrimers with a Dimethoxybenzil Core", *New J. Chem.*, **31**, 1250-1258 (2007).
544. V. Vicinelli, G. Bergamini, P. Ceroni, V. Balzani, F. Vögtle, O. Lukin: "Mechanisms for fluorescence depolarization in dendrimers", *J. Phys. Chem. B*, **111**, 6620-6627 (2007).
545. V. Balzani: "La bellezza dell'infinitamente piccolo: dalle molecole alle macchine molecolari", in "*La bellezza salverà il mondo?*" (a cura di R. Policardo), Marietti, p. 183-211 (2007).
546. F. Puntoriero, P. Ceroni, V. Balzani, G. Bergamini, F. Vögtle: "Photoswitchable Dendritic Hosts. A Dendrimer with Peripheral Azobenzene Groups", *J. Am. Chem. Soc.*, **129**, 10714-10719 (2007).
547. V. Balzani, S. Campagna Eds., Photochemistry and Photophysics of Coordination Compounds vol I, Springer, Berlin, 2007, pp. 1-273.
548. V. Balzani, S. Campagna Eds., Photochemistry and Photophysics of Coordination Compounds vol II, Springer, Berlin, 2007, pp. 1-327.
549. V. Balzani: "La questione energetica oggi", *Rivista di Teologia Morale*, **155**, 343-349 (2007).
550. V. Balzani, G. Bergamini, S. Campagna, F. Puntotiero: "Photochemistry and Photophysics of Coordination Compounds: Overview and General concepts, *Topics Curr. Chem.*, **280**, 1-36 (2007).
551. S. Campagna, F. Puntotiero, F. Nastasi, G. Bergamini, V. Balzani: "Photochemistry and Photophysics of Coordination Compounds: Ruthenium, *Topics Curr. Chem.*, **280**, 117-214 (2007).
- 552 - V. Balzani: "Il secolo fragile", *La Chimica e L'Industria*, n.ro 3 (Aprile) 114-115 (2007).
- 553 - G. Bergamini, P. Ceroni, V. Balzani, M. Gingras, J.-M. Raimundo, V. Morandi, P. G. Merli: "A Novel Synthesis of Small Gold Nanoparticles: Au(I) Disproportionation Catalyzed by a Persulfurated Coronene Dendrimer", *Chem. Commun* 4167-4169 (2007).
- 554 - V. Balzani, A. Juris, F. Puntoriero, S. Campagna; "Luminescent dendrimers based on metal complexes", in *Inorganic Polymers*, R. De Jaeger, M. Gloria eds, Nova Science Publishers, pp. 855-893, (2007).

555. V. Balzani, A. Credi, M. Venturi: "Processing Energy and Signals by Molecular and Supramolecular Species", *Chem. Eur. J.*, **14**, 26-39 (2008).
556. V. Balzani, G. Bergamini, P. Ceroni, A. Credi, M. Venturi: "Photochemically Controlled Molecular Devices and Machines", in *Intelligent Materials* (M. Shahinpoor and J. Schneider, eds.), RCS Publishing, p. 48-75 (2008).
557. V. Balzani, A. Credi, M. Venturi: "Molecular machines working on surfaces and at interfaces", *ChemPhysChem*, **9**, 202-220 (2008).
- 558 - V. Balzani, A. Credi, M. Venturi: "Photochemical conversion of Solar Energy", *ChemSusChem*, **1**, 26-58 (2008).
- 559 – F. Puntoriero, G. Bergamini, P. Ceroni, V. Balzani, F. Vögtle: "Azacrown ethers with naphthyl branches. Fluorescence properties, protonation and metal coordination", *J. Inorg. Organomet. Polym.*, **18**, 189-194 (2008).
560. V. Balzani, A. Credi, M. Venturi: "Artificial Photochemical Devices and Machines", in *Organic Nanostructures* (J.L. Atwood, J.W. Steed, eds.), Wiley-VCH, Weinheim 1-31 (2008).
561. F. Puntoriero, G. Bergamini, P. Ceroni, V. Balzani, F. Vögtle: "A fluorescent guest encapsulated by a photoreactive azobenzene dendrimer", *New. J. Chem.*, **32**, 401-406 (2008).
562. V. Balzani: Nanoscience and nanotechnology: "The bottom-up construction of molecular devices and machines", *Pure Appl. Chem.*, **80**, 1631-1650 (2008).
563. C. Giansante, P. Ceroni, V. Balzani, F. Vögtle: "Self-assembly of a light-harvesting antenna formed by a dendrimer, a RuII complex and a Nd<sup>III</sup> ion", *Angew. Chem. Int. Ed.* **47**, 5265-5277 (2008).
564. V. Balzani, A. Credi, M. Venturi: "Molecular Devices and Machines; Concepts and Perspectives for the Nanoworld", VCH-Wiley, Weinheim, 2008. 1-546.
565. N. Armaroli, V. Balzani: "Fonti di energia e modello di sviluppo", in *Le fonti di energia* (S. Carrà ed.), Il Mulino, 2008, p. 161-177.
566. C. M. Ronconi, J. F. Stoddart, V. Balzani, M. Baroncini, P. Ceroni, C. Giansante, M. Venturi, "Polyviologen Dendrimers as Hosts and Charge-Storing Devices", *Chem. Eur. J.*, **14**, 8365-8373 (2008).
567. N. Armaroli, V. Balzani: "Energia per l'astronave Terra", Zanichelli, 2008, 1-239

568. V. Balzani, G. Bergamini, P. Ceroni: "From the Photochemistry of Coordination Compounds to Light-powered Molecular Devices and Machines", *Coord. Chem. Rev.*, **252**, 2456-2469 (2008).
569. N. Armaroli, V. Balzani: "Energia: è tempo di scelte strategiche", *La Chimica e L'Industria*, Novembre, p. 138-145 (2008).
570. C. Giansante, P. Ceroni, M. Venturi, V. Balzani, J. Sakamoto, A.D. Schlüter: "Shape-persistent macrocycles functionalized with coumarin dyes: acid-controlled energy- and electron-transfer processes", *Chem. Eur. J.*, **14**, 10772 (2008).
571. B. Branchi, V. Balzani, P. Ceroni, M. Campaña Kuchenbrandt, F.-G. Klärner, D. Bläser, R. Boese: "Molecular clips with extended aromatic sidewalls as receptors for electron acceptor molecules. Synthesis and NMR, photophysical, electrochemical properties", *J. Org. Chem.*, **73**, 5839-5851 (2008).
572. M. Gingras, V. Placide, J.-M Raimundo, G. Bergamini, P. Ceroni, V. Balzani: "Polysulfurated pyrene-cored dendrimers: luminescent and electrochromic properties" *Chem. Eur. J.*, **14**, 10357-10363 (2008.)
573. V. Balzani, M.T. Gandolfi, M. Venturi: "Energia: la profezia di Giacomo Ciamician, le difficoltà del presente, le speranza per il futuro", in "Ciamician, profeta dell'energia solare" a cura di M. Venturi, Fondazione Enrico Mattei (2008).
574. V. Balzani: Comment on "Molecular devices and machines", *ChemPhysChem*, **10**, 21 (2009).
575. V. Balzani, G. Bergamini, P. Ceroni: "Light-powered Molecular Devices and Machines", in *Nanoparticles and Nanodevices in Biological Applications* (S. Bellucci, ed.), Springer, **4**, 131-158 (2009).
576. G. Bergamini, P. Ceroni, V. Balzani, R. Kandre, O. Lukin: "Dendrimers with a pentaphenylene core. A photophysical study", *ChemPhysChem*, **10**, 265-269 (2009).
577. B. Branchi, P. Ceroni, V. Balzani, M. C. Cartagena, F.-G. Klärner, T. Schrader, F. Vögtle: "Fluorescent water-soluble molecular clips. Self-association and formation of adducts in aqueous and methanol solution", *New J. Chem.* **33**, 397-407 (2009).
578. B. Branchi, P. Ceroni, V. Balzani, G. Bergamini, F.-G. Klärner, F. Vögtle: "Adducts between dansylated poly(propylene amine) dendrimers and anthracene clips mediated by



- Zn(II) ions. Highly efficient photoinduced energy transfer”, *Chem. Eur. J.*, **15**, 7876-7882 (2009).
579. V. Balzani, A. Credi, M. Venturi: “Light powered molecular machines”, *Chem. Soc. Rev.*, **38**, 1542-1550 (2009).
580. V. Balzani: “Leggere, scrivere, ricordare con le molecole”, in *Dialoghi sulla Memoria* (G. Fiorentini, ed.), UnifePress, 73-84 (2009).
581. P. Ceroni, G. Bergamini, V. Balzani: “Old molecules, new concepts: [Ru(bpy)<sub>3</sub>]<sup>2+</sup> as a molecular encoder-decoder”, *Angew. Chem. Int. Ed.*, **48**, 8516-8518 (2009). Highlighted by *Eur. J. Inorg. Chem.* 4910 (2009).
582. V. Balzani, A. Credi, M. Venturi: “Macchine a livello molecolare” *Il Nuovo Saggiatore*, **25**(5-6), 37-48 (2009).
583. V. Balzani, A. Credi, M. Venturi: “Nanorobot: le macchine molecolari”, in *Robot – Scienza e coscienza delle macchine* (a cura di C. Fuschetto, P. Greco), CUEN, Napoli, p. 79-93 (2009).
584. M. Venturi, V. Balzani: “Il futuro della Chimica: dispositivi e macchine a livello molecolare”, *CnS, la Chimica nella Scuola*, **3**, 163-175 (2009).

## Reviews on the books written or edited by V. Balzani

### Photochemistry of Coordination Compounds

V. Balzani and V. Carassiti, Academic Press, London, 1970

- *J. Am. Chem. Soc.*, **93**, 3560 (1971) by G. D. Mendenhall
- *Inorg. Chim. Acta* (1971) by A. D. Kirk
- *Chem. and Ind.* (1971) by R. J. H. Clark
- *American Scientist*, 59(4) (1971) by R. E. Tapscott
- *Ber. Bunsenges. Phys. Chem.*, 75, 179 (1971) by F. Wasgestian
- *Journal de Chimie Physique*, 10 (1971) by G. Emschwiller
- *Roczniki Chemii*, 45, 593 (1971), by A. Swinarski

### Supramolecular Photochemistry

V. Balzani and F. Scandola, Horwood, Chichester, 1991

- *J. Am. Chem. Soc.*, 115, 1617 (1993), by J.S. Connolly
- *Angew. Chem. Int. Ed. Engl.*, 31, 104 (1992), by H. Heitele
- *IAPS Newsletter*, 67 (November 1992), by R.G. Weiss
- *J. Incl. Phen. Mol. Recogn.*, 13, 105 (1992), by J.K.M. Sanders
- *EPA Newsletter*, 42, 43 (1991), by J.W. Veroheven
- *Coord. Chem. Review*, 123, 249 (1993), by the Editor
- *Chem. Ind.*, 158, (1 March 1993), by F. Wilkinson
- *Inorg. Chim. Acta*, 209, 111 (1993), by A. von Zelewsky
- *Ber. Bunsenges. Phys. Chem.*, 95, 1161 (1991), by A. Vogler
- *Z. Phys. Chem.*, 175, 125 (1992), by L. Duenkel
- *Supramolecular Chemistry*, 3, 83 (1993), by G.W. Gokel

### Electron Transfer in Chemistry

Editor in chief: V. Balzani, five volumes, Wiley-VCH, Weinheim, 2001

- *Angew. Chem. Int. Ed.*, 22, 4295 (2001), by S. R. Waldvogel and C. Mück-Lichtenfeld
- *ChemPhysChem*, 2, 701 (2001) by M. Van Der Auweraer and F. C. De Schryver
- *J. Am. Chem. Soc.*, 124, 7250 (2002), by M.S. Workentin.

**Molecular Devices and Machines. A Journey into the Nano World**

V. Balzani, A. Credi, M. Venturi, Wiley-VCH, Weinheim, 2003.

- *Angew. Chem. Int. Ed.*, 42, 2331 (2003), by F. Vogtle and A. Schalley.
- *ChemPhysChem*, 4, 771 (2003), by F.R. Raymo.
- *ChemBioChem*, 4, 663 (2003), by A.P. de Silva.
- *Wissenschaft-online*, August 18 (2003), by R. Puchta.
- *J. Am. Chem. Soc.*, 126, 10191 (2004), by T.R. Kelly.
- *Physik Journal*, 3, No. 8/9 (2004), by Marcel Mayor.