

PROF. NICK SERPONE

Office: Dipartimento di Chimica Organica

Universita di Pavia,

Via Taramelli, 10

27100 Pavia, Italia

Tel: (+39) 0382-98 73 16

Fax: (+39) 0382-98 73 23

Cell: (+39) 348-004-9080 (Italy)

Cell (+1) 514-207-9551 (Canada)

E-mail addresses: nick.serpone@unipv.it ; nickser@alcor.concordia.ca ; serpone@videotron.ca

A senior academic, research scientist, program manager and industry consultant with extensive North American and International experience. Many years of close collaboration with Canadian, American, Japanese, Chinese, Russian, and European scientists, and working sabbaticals in France, Italy, Switzerland and the United States, have given him an intimate knowledge of the working relationships between academia, industry and government agencies in various countries. As Program Director at the National Science Foundation (1998-2001), Washington, DC, he co-managed and recommended funding for many of America's most prestigious researchers. A prolific editor and contributor to numerous books and journals, with over 360 papers published in a variety of prestigious journals, he was the 1997 recipient of the "Best Paper Award" from the Society for Imaging Science and Technology. An industry consultant, he has had a long and fruitful relationship with the 3M Company in the United States and was the founding partner and Vice-President of a company established (with David Ollis of North Carolina State University) to develop a commercial technology for environmental pollution abatement. A skilled organizer, efficient, professional and analytical, he has chaired numerous organizing committees, review panels and appeal boards at the provincial, national and international (NSF & DOE) levels, and was a member of a Task Force of the US National Academy of Sciences (1990-1991). Fluently trilingual, written and spoken, and an effective communicator, both horizontally and vertically, he is also a frequent Keynote Address Speaker and Invited Plenary Lecturer.

PROFESSIONAL HISTORY

VISITING PROFESSOR (RIENTRO DEI CERVELLI)

DECEMBER 2002 – 2005

Dipartimento di Chimica Organica, Universita di Pavia, Italy

- Continues to carry out active research into the **photochemistry of sunscreen active agents** with Angelo Albini (Pavia), into the **photochemistry and photophysics of metal-oxide nanomaterials** (Drs. A. Emeline, V. Ryabchuk and V. Kuznetsov of State University of St. Petersburg, Russia), and into **Environmental Photo-chemistry** (Prof. H. Hidaka of Meisei University and Prof. S. Horikoshi of Sophia University, Japan).
- He gives lectures to Ph.D. students and undergraduates (University of Pavia) in Catalysis, Photocatalysis, and Molecular Spectroscopy.
- Guest Editor, Journal of Advanced Oxidation Technologies (2006).

UNIVERSITY RESEARCH PROFESSOR

JUNE 1998 – MAY 2004

PROFESSOR EMERITUS

JUNE 1998 -

Concordia University, Montreal, Quebec, Canada

Directed vigorous and exciting research program as attested by publications and presentations at conferences/colloquia/symposia and seminars. Active collaborations in (1) photobiology and

photochemistry of sunscreens with investigators at the University of Oxford, UK, and University of Pavia, Italy, (2) environmental photochemistry with colleagues at Meisei University, Japan, and at the Chinese Academy of Sciences in Beijing, China, and (3) in materials research with Russian scientists at the State University of St. Petersburg.

- Best Paper Award (1997) from Society for Imaging Science & Technology
- Listed as # 892 in a list of most cited chemists in the world (out of about 0.5 million)
- Associate Editor for the Journal of Advanced Oxidation Technologies (1994-2005)

PROGRAM DIRECTOR

SEPTEMBER 1998 - JULY 2001

National Science Foundation, Arlington, VA (USA)

Responsible for managing research proposals in Inorganic, Bioinorganic & Organometallic Chemistry, and co-managing funding of \$20M annually.

- Provided optimal support for best projects; exercised appropriate scientific judgment and consistency in award and declination process;
- Balanced appropriate sub-fields and institutions;
- Promoted participation of all qualified scientists;
- Prepared proposal recommendations and provided documentation in line with Divisional and Foundation practices and policies and made recommendations regarding funding levels.
- Communicated verbally results of review process and appropriate recommendations with all principal investigators. Advised declined investigators on strategies for winning proposals.
- Participated in review process and site visit panel for Science & Technology Centers.
- Assisted, participated and chaired internal CRIF/MRI (instrumentation) Panels, CAREER Panels for young principal investigators, and Panels for marginal Proposals.
- Traveled to Tokyo to meet with staff of NSF's Office in Japan and delivered two plenary lectures at University of Tokyo and at Meisei University.
- Maintained active research program while at NSF.

PROFESSOR

JUNE 1980 – MAY 1998

ASSOCIATE PROFESSOR

JUNE 1973 – MAY 1980

ASSISTANT PROFESSOR

JUNE 1968 – MAY 1973

Concordia University, Montreal, Canada

- Teacher, research scientist and mentor to undergraduate and graduate students, post-doctoral associates, and several visiting scientists.
- Recipient of research funding (30 years) from NRC, NSERC, NATO, France-Quebec Exchange Program, and FCAC Quebec.
- Chairman and member of numerous committees internal and external to the university and at the local and international level.
- Member, Canada Advisory Committee on ISO/TC206 (as of July 2003)
- Associate Member, Commission on Photochemistry, International Union of Pure & Applied Chemistry (1997-2000), and member of the sub-Committee on Photo-chemistry (2000 -...).
- Chairman (1986 - 1987) and member of Concordia University Faculty Appeals Board (1978 - 1987).
- Membre de la Commission d'Evaluation des projets de programmes universitaires, Conference des Recteurs et des Principaux des Universites du Quebec (1993-1994).
- Membre du Comite d'Evaluations des echanges Quebec-Flandres et Quebec-Italie, Ministere

- des Affaires Internationales du Quebec (1993 - 1994).
- Membre du Jury d'Evaluation #32, FCAC, Quebec, Bourses d'Etudes Superieures (1978 - 1981)
- President et membre (1985-1986) Comite des Subventions #04, FCAR, Quebec (1984 - 1987)
- Membre, Comite des Examineurs, Ordre des Chimistes du Quebec (1977 - 1979)
- President, Comite Experience, Ordre des Chimistes du Quebec (1979 - 1981)
- Co-Organizer, NATO Advanced Research Workshop, Italy, 1985.
- Councilor, Division of Inorganic Chemistry, Chemical Institute of Canada, Ottawa (1983 - 1985).
- Best Paper Award (with Mel Sahyun & Boris Levy), Society of Imaging Science & Technology, May 1997.

EDUCATION

Ph.D, *Physical Inorganic Chemistry* **1964-1968**
Cornell University, Ithaca, N.Y.

Fellowships & Scholarships

- National Research Council of Canada Predoctoral Fellowship, Cornell University 1966 - 1968
- Cornell University Graduate Fellowship, Cornell University, 1965-1966.
- Woodrow Wilson Foundation Fellowship, Cornell University, 1964-1965.

B.Sc., *Honors Chemistry* **1960-1964**
Sir George Williams University, Montreal, Canada

Awards

- Chemical Institute of Canada Prize 1963.
- Chemical Industries Limited Prize 1964.
- Mappin Medal, Highest Academic Standing in Science, 1964.
- Society of the Chemical Industry Gold Key Award 1964.

SPECIAL SKILLS AND OTHER ACCOMPLISHMENTS

- Fluently trilingual, written and spoken: English, French, and Italian.
- Reading knowledge of Spanish, Portuguese (and some German).
- President fondateur, Comite des Chimistes a l'Entrainement, Ordre des Chimistes du Quebec (1979 - 1981).
- Founded and directed the National Center for Fast Laser Spectroscopy (1981-1987 & 1993 - 2001).
- Chairman, Review Panel for U.S. Department of Energy, Office of Basic Energy Sciences (Washington).
- Founding partner and vice-president R&D, Photolytics Inc., Chapel Hill, NC (1987 - 1992). Made contacts and sought venture capital funding to establish and develop a commercial technology for environmental pollution abatement.
- Long term collaboration with industrial chemists at 3M Company (St Paul, Minn) in understanding the silver halide imaging process.
- Visiting Professor, Laboratorio di Fotochimica, Universita di Bologna, Italy (1975 - 1976).
- Visiting Professor, Department of Chemistry, Boston University, Summer 1978 and Spring

- Semester 1979.
- Visiting Scientist, Department of Chemistry, Brookhaven National Laboratory, Upton, NY, summers 1979 and 1980; April - October 1981.
- Professeur Invite, Ecole Polytechnique Federale de Lausanne, Suisse (1983-1984).
- Directeur de Recherche, Ecole Centrale de Lyon, Lyon, France (1990-1991).
- Visiting Professor, Universita di Ferrara, Italy (1997-1998).
- Participated on Task Force of the U.S. National Academy of Sciences (1990-1991) to study applications of Solar Furnaces. As part of study, toured selected European laboratories with interests in high temperature photochemistry.
- Member of Review Panel of U.S Department of Energy. CRADA projects (Seattle, WA 1997).
- Program Director, Inorganic, BioInorganic & Organometallic Chemistry program, Division of Chemistry, U.S. National Science Foundation, Arlington, VA (1998 – 2001).

PATENTS

1. "Procede de sensibilisation d'un photocatalyseur d'oxydoreduction et photocatalyseur ainsi obtenu".

Inventeurs: Michael Gratzel, EPFL Lausanne, Suisse.
 Nick Serpone, EPFL Lausanne, Suisse.
 Dung Duonghong, EPFL Lausanne, Suisse.

Brevet Suisse No. 2113/84.

2. "Process for the Sensitization of Oxidation/Reduction Photocatalyst and Photocatalyst thus Obtained".

Inventors: M. Gratzel, EPFL Lausanne, Suisse
 N. Serpone, EPFL Lausanne, Suisse
 D. Duonghong, EPFL Lausanne, Suisse

U.S. Patent No. 4,684,537 of August 4,

1987.

PUBLICATIONS

(A) BOOKS

- ***"Photosensitive Metal-Organic Systems: Mechanistic Principles and Recent Applications"***.
 C. Kutal and N. Serpone, Eds., *Advances in Chemistry Series*, Vol. 238, American Chemical Society, Washington, D.C., 1993, 435 pages.
- ***"Photochemical Technology"***.
 David F. Ollis and Nick Serpone, (book translated from the French "Technologies Photochimiques", by A. Braun et al., Presses Suisses Romandes), Wiley, London, 1991, 559 pages.
- ***"Photocatalysis - Fundamentals and Applications"***
 N. Serpone and E. Pelizzetti, Eds., Wiley-Interscience, New York, 1989, 650 pages.
- ***"Homogeneous and Heterogeneous Photocatalysis"***.
 E. Pelizzetti and N. Serpone, Eds., NATO ASI Series, Series C: Mathematical and Physical Sciences, vol. 174, D. Reidel Publ.Co., Dordrecht, Holland, 1986.

(b) RESEARCH PAPERS (Publications: January 2003 –)

{C = communication or note; F = full paper; R= review; Ch = chapter}

2007

- Ch373 N. Serpone, A. Emeline, V. N. Kuznetsov, V. K. Ryabchuk, (*Invited Chapter*) “Second-Generation Photocatalysts and Associated Bandgap Narrowing in Metal-Oxide Semiconductor Nanomaterials”, in *Environmental Benign Photocatalysis – Applications of Titanium-Oxide Based Catalysts*, M. Anpo, Ed. *To be submitted February 2007*.
- F372. S. Horikoshi, M. Kajitani, and N. Serpone, “The microwave-/photo-assisted degradation of bisphenol-A in aqueous TiO₂ dispersions revisited - Re-assessment of the microwave non-thermal effect”, *J. Photochem. Photobiol. A:Chem.*, *in press 2007*.
- F371. Hisao Hidaka, Teruo Kurihara and Nick Serpone (*Invited article*), “Photo-assisted mineralization of the agrochemical insecticides Oxamyl and Methomyl and the herbicides Diphenamid and Asulam”, in *Environmental Benign Photocatalysis – Applications of Titanium-Oxide Based Catalysts*, M. Anpo, Ed. *in press 2007*.
- F370. Hisao Hidaka, Aiko Saitou, Haruo Honjou, Kazuo Hosoda, Masafumi Moriya and Nick Serpone, “Microwave-Assisted Dechlorination of Polychlorobenzenes by Hypophosphite Anions in Aqueous Alkaline Media in the Presence of Pd-loaded Active Carbon”, *J. Hazard. Mater.* *in press 2007*.
- F369. Nick Serpone, “Some remarks on so-called heterogeneous photocatalysis and on the mechanical application of the Langmuir-Hinshelwood kinetic model”, *J. Adv. Oxid. Technol.*, *in press 2007*.
- F368. A. V. Emeline, V. K. Ryabchuk, and N. Serpone (*Invited paper*), “Photoreactions occurring on metal-oxide surfaces are not all photocatalytic. Description of criteria and conditions for processes to be photocatalytic”, *Catal. Today*, *in press 2007*.
- Ch367. N. Serpone and A.V. Emeline, "Solar Photocatalysis I. The Fundamental Science Underlying Metal-Oxide Heterogeneous Photocatalysis", in *Photoconversion of Solar Energy – Photochemical and Photoelectrochemical Approaches*, M.D. Archer and A.J. Nozik, Eds., Imperial College Press, London, vol. III, Chapter 5, *in press, 2007* (122 printed pages).
- F366. Nick Serpone, Daniele Dondi, Angelo Albini, “Inorganic and Organic UV Filters. Their Role and Efficacy in Sunscreens and Suncare Products”, *Inorg. Chim. Acta*, *in press 2007* – (Special Issue dedicated to Prof. V. Balzani of the University of Bologna).

2006

- F365. Vyacheslav N. Kuznetsov and Nick Serpone, “Photo-Induced Coloration and Photobleaching of Titanium Dioxide in TiO₂/Polymer Compositions on UV- and Visible-Light Excitation into the Color Centers’ Absorption Bands. Direct Experimental Evidence Negating the Existence of Band Gap Narrowing in Anion-/Cation-Doped TiO₂”, *Chem. Phys.*, *submitted October 2006*.
- F364. Satoshi Horikoshi, Naoko Ohmori, Masatsugu Kajitani, and Nick Serpone, “Examination of non-thermal effects using a novel microwave device with controlled ambient temperature”, *Conference Proceedings*, *submitted October 2006*.
- F363. A. V. Emeline, N. V. Sheremetyeva, N. V. Khomchenko, V. K. Ryabchuk, and N. Serpone “Photoinduced Formation of Defects and Nitrogen-Stabilization of Color Centers in N-doped TiO₂”,

Phys. Chem. Chem. Phys., **submitted October 2006**.

- C362. Satoshi Horikoshi, Naoko Ohmori, Masatsugu Jajitami, and **Nick Serpone**, “Microwave-enhanced bromination of a terminal alkyne in short time at ambient temperature. Synthesis of phenylacetylene bromide”, *J. Photochem. Photobiol. A:Chem.* **submitted December 2006**.
- F361. Saroshi Horikoshi, Nasatsugu Kagitani, Susumu Sato, and **Nick Serpone**, “A novel environmental risk-free microwave discharge electrodeless lamp (MDEL) in advanced oxidation processes – degradation of the 2,4-D herbicide”, *J. Photochem. Photobiol. A:Chem.*, **submitted December 2006**.
- F360. Hisao Hidaka, Haruo Honjo, Satoshi Horikoshi, and **Nick Serpone**, “Photoinduced Ag_n⁰ Cluster Deposition. Photoreduction of Ag⁺ ions on a TiO₂-coated quartz crystal microbalance monitored in real time”, *Sensors & Actuators B*, **revised version submitted September 2006**.
- F359. V. N. Kuznetsov and **N. Serpone**, “Visible Light Absorption by Various Titanium Dioxide Specimens”, *J. Phys. Chem. B*, **110**, 25203-25209 (2006) (Special Issue in honor of Art Nozik).
- F358. Daniele Dondi, Angelo Albini, and **Nick Serpone**, ‘Interactions between different solar UVB/UVA filters contained in commercial suncreams and consequent loss of UV protection’, *Photochem. Photobiol. Sci.*, **5**, 835-843 (2006).
- C357. Hisao Hidaka, Haruo Honjo, Satoshi Horikoshi, and **Nick Serpone**, “Photocatalyzed degradation on a TiO₂-coated quartz crystal microbalance. Adsorption/desorption processes in real time in the degradation of benzoic acid and salicylic acid”, *Catal. Commun.*, **7**, 331-335 (2006).
- F356. **N. Serpone**, A. Salinaro, A.V. Emeline, S. Horikoshi, and H. Hidaka, “Beneficial effect of modified titanium dioxide specimens on plasmid DNA, human cells and yeast cells exposed to UVA/UVB simulated-sunlight illumination”, *J. Photochem. Photobiol. A:Chem.*, **179**, 200-212 (2006).
- F355. Hisao Hidaka, Hiroyuki Kobayashi, Takayoshi Koike, Tsugio Sato, and **Nick Serpone**, “DNA damage photoinduced by cosmetic pigments and sunscreen agents under solar exposure and artificial UV illumination”, *J. Oleo Sci.*, **55**, 249-261 (2006).
- F354. Satoshi Horikoshi, Atushi Tokunaga, Natsuko Watanabe, Hisao Hidaka, and **Nick Serpone**, “Environmental Remediation by an Integrated Microwave/UV-Illumination Technique. IX. Peculiar Hydrolytic and co-Catalytic Effects of Pt on the TiO₂ Photocatalyzed Degradation of the 4-Chlorophenol Toxin in a Microwave Radiation Field”, *J. Photochem. Photobiol. A:Chem.*, **177**, 129-143 (2006).

2005

- F353. Nick Serpone, Daniele Dondi, and Angelo Albini, Sunscreen Lotions. Are they as good protectors against UVB/UVA radiation as they are claimed to be? Or are we playing Russian Roulette?”, *Proceedings 1st World Congress in New Technologies to Prevent Skin Cancer and Photoaging*, Siena, Italy, October 19-21, 2005.
- F350. A. V. Emeline, V. K. Ryabchuk and **N. Serpone**, “Dogmas and misconceptions in hetero-geneous photocatalysis. Some enlightened reflections”, *J. Phys. Chem. B*, **109**, 18515-18521 (2005).
- F349. A.V. Emeline, G.N. Kuzmin, L.L. Basov, and **N. Serpone**, “Photoactivity and Photo-selectivity of a Dielectric Metal-Oxide Photocatalyst (ZrO₂) Probed by the Photoinduced Reduction of Oxygen

and Oxidation of Hydrogen”, *J. Photochem. Photobiol. A:Chem.*, **174**, 214-221 (2005).

- F348. H. Hidaka, M.S. Vohra, O. Toshiyuki, N. Watanabe, S. Horikoshi, and **N. Serpone**, "Photocatalysis at Solid/Liquid Interfaces. - Photooxidation of mixed aqueous surfactants at the TiO₂/H₂O interface", *Surfactant Sci. Series*, **124**, 769-793 (2005).
- R347. **N. Serpone** and A. V. Emeline, "Modeling Heterogeneous Photocatalysis by Metal-Oxide Nanostructured Semiconductor and Insulator Materials. Factors that affect the activity and selectivity of photocatalysts", *Res. Chem. Intermed.*, **31**, 391-432 (2005).
- F346. Natsuko Watanabe, Satoshi Horikoshi, Hisao Hidaka, and **Nick Serpone**, "On the recalcitrant nature of the triazinic ring species, cyanuric acid, to degradation in Fenton solutions and in UV-illuminated TiO₂ (naked) and fluorinated TiO₂ aqueous dispersions", *J. Photochem. Photobiol. A:Chem.*, **174**, 229-238 (2005).
- F345. Natsuko Watanabe, Satoshi Horikoshi, Atsushi Kawasaki, Hisao Hidaka, and **Nick Serpone**, "Formation of Refractory Ring-Expanded Triazine Intermediates During the Photocatalyzed Mineralization of the Endocrine Disruptor Amitrole and Related Triazole Derivatives at UV-Irradiated TiO₂/H₂O Interfaces", *Environ. Sci. Technol.*, **39**, 2320-2326 (2005).
- F344. A.V. Emeline, G.V. Kataeva, A.V. Panasuk, V.K. Ryabchuk, N.V. Sheremetyeva, and **N. Serpone**, "Effect of Surface Photoreactions on the Photocoloration of a Wide Bandgap Metal Oxide – Probing Whether Surface Reactions are Photocatalytic", *J. Phys. Chem. B*, **109**, 5175-5185 (2005).
- F343. A.V. Emeline, A.V. Panasuk, N. Sheremetyeva, and **N. Serpone**, "Mechanistic Studies of the Formation of Different States of Oxygen on Irradiated ZrO₂ and the Photocatalytic Nature of Photoprocesses from Determination of Turnover Numbers", *J. Phys. Chem. B*, **109**, 2785-2792 (2005).
- F342. Nick Serpone, Jean Martin, Satoshi Horikoshi, and Hisao Hidaka, "Photocatalyzed oxidation and mineralization of branched and oxidized C4 and C5 aliphatic acids in UV-irradiated aqueous titania dispersions. Adsorption and degradation dynamics", *J. Photochem. Photobiol. A:Chem.*, **170**, 51-60 (2005).
- F341. Nick Serpone, Jean Martin, Satoshi Horikoshi, and Hisao Hidaka, "Photocatalyzed oxidation and mineralization of C1-C5 linear aliphatic acids in UV-irradiated aqueous titania dispersions - kinetics, identification of intermediates and quantum yields", *J. Photochem. Photobiol. A:Chem.*, **169**, 235-251 (2005).

2004

- F340. Toshiyuki Oyama, Akio Aoshima, Satoshi Horikoshi, Jincai Zhao, **Nick Serpone**, and Hisao Hidaka, "Solar Photocatalysis. - Photodegradation of a commercial detergent in aqueous TiO₂ dispersions under sunlight irradiation", *Solar Energy*, **77**, 525-532 (2004).
- F339. Satoshi Horikoshi, Fukuya Hojo, Hisao Hidaka, and **Nick Serpone**, "Environmental Remediation by an Integrated Microwave/UV-Illumination Technique. 8. Thermal and nonthermal effects in the adsorption and oxidative degradation of carboxylic acids, alkoxy carbonyl, aldehyde and alcoholic substrates on the surface of TiO₂ particles", *Environ. Sci. Technol.*, **38**, 2198-2208, (2004).
- F338. C. Chen, W. Zhao, P. Lei, J. Zhao, and **N. Serpone**, "Photosensitized degradation of dyes in polyoxometalate solutions versus TiO₂ dispersions under visible light irradiation: Mechanistic

implications”, *Chemistry - Europ. J.*, **10**, 1956-1965 (2004).

- F337. Hisao Hidaka, Takayoshi Koike, Teruo Kurihara, and **Nick Serpone**, “Dynamics and mechanistic features in the photocatalyzed oxidation of disulfonated anionic surfactants on the surface of UV-irradiated titania nanoparticless”, *New J. Chem.*, **28**, 1100-1106 (2004).
- F336. S.A. Polikhova, N.S. Andreev, A.V. Emeline, V.K. Ryabchuk, and **Nick Serpone**, “Modeling and Experimental Examination of the Solonytsin Memory Effect on the Surface of Wide Bandgap Metal Oxides”, *J. Phys. Chem. B*, **108**, 2354-2361 (2004).
- F335. S. Horikoshi, A. Tokunaga, H. Hidaka, and **N. Serpone**, "Environmental Remediation by an Integrated Microwave/UV-Illumination Technique. VII. Thermal/non-thermal effects in the microwave-assisted photocatalyzed mineralization of bisphenol-A”, *J. Photochem. Photobiol. A:Chem.*, **162**, 33-40 (2004).
- F334. S. Horikoshi, H. Hidaka, and **N. Serpone**, "Environmental Remediation by an Integrated Microwave/UV-Illumination Technique. VI. A simple modified domestic microwave oven integrating an electrodeless UV/Vis lamp to photodegrade environmental pollutants in aqueous media”, *J. Photochem. Photobiol. A:Chem.*, **161**, 221-225 (2004).
- F333. N.S. Andreev, A.V. Emeline, S.A. Polikhova, V.K. Ryabchuk, and **N. Serpone**, “Photo-induced Adsorption of Hydrogen and Methane on γ -Alumina. The Photoinduced Chesor-luminescence (PhICL) Effect”, *Langmuir*, **20**, 129-135 (2004).
- F332. Chuncheng Chen, Pengxiang Lei, Hongwei Ji, Wanhong Ma, Jincai Zhao, Hisao Hidaka, and **Nick Serpone**, “Photocatalysis by titanium dioxide and polyoxometalate/TiO₂ co-catalysts. Intermediates and mechanistic study”, *Environ. Sci. Technol.*, **38**, 329-337 (2004).

2003

- F331. H. Hidaka, S. Horikoshi, T. Oyama, and **N. Serpone**, "Photocurrent generation in the photo-degradation of water-soluble organic materials on a TiO₂ thin film electrode", *Photo-electrochem. Photobiol. Environ. Energy & Fuel*, 101-107 (2003).
- F330. S. Horikoshi, A. Saitou, H. Hidaka, and **N. Serpone**, "Environmental Remediation by an Integrated Microwave/UV-Illumination Technique. V. Thermal/non-thermal effects of microwave radiation on the mechanism of the photocatalyzed degradation of rhodamine-B dye under UV/Vis irradiation”, *Environ. Sci. Technol.*, **37**, 5813-5822 (2003).
- F329. H. Hidaka, H. Honjou, S. Horikoshi, and **N. Serpone**, "Photocatalyzed degradations on a TiO₂-coated quartz crystal microbalance. I. Adsorption/ desorption processes in the degradation of Phenol and Catechol ", *New J. Chem.*, **27**, 1371-1376 (2003).
- F328. A. Emeline, A. Frolov, V. Ryanchuk, and **N. Serpone**, "Spectral Dependencies of the Quantum Yield of Photochemical Processes on the Surface of Nano-Micro-Particulates of Wide-Band-Gap Metal Oxides. IV. Theoretical modeling of the activity and selectivity of semiconductor photocatalysts with inclusion of a subsurface electric field in the space charge region", *J. Phys. Chem. B*, **107**, 7109-7119 (2003).
- F327. S. Horikoshi, Y. Wada, N. Watanabe, H. Hidaka, and **N. Serpone**, "Near-quantitative mineralization of two refractory triazines under hydrothermal- supercritical aqueous conditions assisted by ozone and UV/ozone", *New J. Chem.*, **27**, 1216-1223 (2003).

- F326. S. Horikoshi, H. Hidaka, and **N. Serpone**, "Hydroxyl Radicals in Microwave Photocatalysis. Enhanced formation of •OH radicals probed by ESR techniques in microwave-assisted photocatalysis in aqueous TiO₂ dispersions", *Chem. Phys. Letters*, **376**, 475-480 (2003).
- F325. S. Horikoshi, F. Houjo, **N. Serpone**, and H. Hidaka, "Environmental Remediation by an Integrated Microwave/UV-Illumination Technique. IV. Degradation of 2,4-dichlorophenoxyacetic acid under simultaneous UV light and microwave radiation in TiO₂/H₂O dispersions", *J. Photochem. Photobiol. A: Chem.*, **159**, 289-300 (2003).
- F324. N. Watanabe, S. Horikoshi, K. Suzuki, H. Hidaka, and **N. Serpone**, "Mechanistic inferences of the photocatalyzed oxidation of chlorinated phenoxyacetic acids by electrospray mass spectral techniques and from calculated point charges and electron densities on all atoms", *New J. Chem.*, **27**, 836-843 (2003).
- F323. W. Zhao, C. Chen, W. Ma, J. Zhao, D. Wang, H. Hidaka, and **N. Serpone**, "Efficient photo-induced conversion of an azo dye on hexachloroplatinate(IV)- modified TiO₂ surfaces under visible light irradiation. An alternative photosensitization pathway", *Chemistry - Europ. J.*, **9**, 3292-3299 (2003).
- R322. A.V. Emeline, V.A. Otroshchenko, V.K. Ryabchuk, and **N. Serpone**, "Abiogenesis and photo-stimulated heterogeneous reactions in interstellar media and on primitive Earth. Relevance to the Genesis of Life", *J. Photochem. Photobiol. C: Revs.*, **3**, 203-224 (2003).
- F321. T. Zhang, T. Oyama, S. Horikoshi, J. Zhao, **N. Serpone**, and H. Hidaka, "Photocatalytic decomposition of the sodium dodecylbenzenesulfonate surfactant in aqueous titania suspensions exposed to highly concentrated solar radiation and effects of additives", *App. Catal. B, Environ.*, **42**, 13-24 (2003).
- F320. H. Hidaka, T. Koike, and **N. Serpone**, "Photocatalytic degradation of surfactants. XX. Photo-oxidation of sodium butylnaphthalenesulfonates", *J. Oleo Science*, **52**, 245-253 (2003).

SEMINARS at INSTITUTES and UNIVERSITIES

- ◆ Dipartimento di Chimica Organica, Università di Pavia, Pavia, Italy, January 28, 2003.
- ◆ Dipartimento di Chimica Organica, Università di Pavia, Pavia, Italy, February 20, 2003.
- ◆ Dipartimento di Chimica Organica, Università di Pavia, Pavia, Italy, March 25, 2003.
- ◆ Dipartimento Chimico, Università di Ferrara, Ferrara, Italy, May 17, 2005.
- ◆ Dipartimento di Chimica Ciamician, Università di Bologna, Bologna, Italy, May 19, 2005.

CONFERENCES & SYMPOSIA

2003

- **187.** **N. Serpone**, A. Emeline, V. Otroshchenko, and V. Ryabchuk, Abiogenesis and photostimulated heterogeneous reactions in interstellar media and in the primitive Earth's atmosphere. Relevance to the Genesis of Life, *Symposium on Nanotechnology (A2)*, 203rd Meeting of the Electro-chemical

Society, Paris (France), April 27-May 2, 2003.

- **188.** A. Emeline, S. Polikhova, V. Ryabchuk, and **N. Serpone**, Photoinduced processes in heterogeneous gas-solid systems. Temperature dependence and modeling of a surface chemical reaction on zirconia triggering photophysical events in the solid, *Symposium on Nanotechnology (A2)*, 203rd Meeting of the Electrochemical Society, Paris (France), April 27-May 2, 2003.
- **189.** A. Emeline, A. Frolov, V. Ryabchuk, and **N. Serpone**, Modeling the activity and selectivity of semiconductor photocatalysts in heterogeneous photocatalyzed processes - Inclusion of sub-surface electric fields in the space charge region, *Gerisher Symposium*, 203rd Meeting of the Electrochemical Society, Paris (France), April 27-May 2, 2003.
- **190.** A. Emeline, A. Frolov, V. Ryabchuk, and **N. Serpone**, Theroetical modeling of the activity and selectivity of semiconductor photocatalysts in heterogeneous photocatalyzed processes - Inclusion of subsurface electric fields in the space charge region, *39th IUPAC Congress & 86th Conference of the Canadian Society for Chemistry*, Ottawa (Canada), August 10-15, 2003.
- **191.** A. Emeline, S. Polikhova, V. Ryabchuk, and **N. Serpone**, Temperature dependence and modeling a surface chemical reaction on zirconia triggering photophysical events in the solid - The PhICL phenomenon, *39th IUPAC Congress & 86th Conference of the Canadian Society for Chemistry*, Ottawa (Canada), August 10-15, 2003.
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