

3rd. International Microscale Chemistry Symposium

May 18 - 20, 2005

Venue: Universidad Iberoamericana - Ciudad de Mexico

Co-sponsors:

Mexican Microscale Chemistry Center
Universidad Iberoamericana
CONACYT
PROVITEC
Green Chemistry Institute

This symposium is aimed at gathering international and national experts in Microscale Chemistry to present their new ideas and developments. The event will honor the 3 founders of the USA National Microscale Chemistry Center: Ronald Pike, Mohan Singh and Zvi Szafran.

<http://www.uia.mx/investigacion/cmqm/default.html>

Lecturers and Workshop leaders:

- **Ronald Pike** (National Microscale Chemistry Center, USA).
- **Mohan Singh** (National Microscale Chemistry Center, USA).
- **Zvi Szafran** (New England College, USA).
- **Alejandro Baeza** (Universidad Nacional Autónoma de México).
- **Wing Hong Chan** (Hong Kong Baptist University, Hong Kong).
- **Ken Doxsee** (University of Oregon, USA).
- **Christer Gruvberg** (University of Halmstad, Sweden).
- **Mordechai Livneh** (Bar Ilan University, Israel).
- **Viktor Obendrauf** (Graz Pedagogical Academy, Austria).
- **Peter Schwarz** (Mirecol, Egypt – Germany) and Muhamad Hugerat (Arab College for Education – Israel).

The official language for the workshop is English (selected partial translations into Spanish are anticipated).

CONTESTS:

- a) Design of a miniature magnetic stirrer
- b) Chemical production of the colors of the Mexican flag (green, white, and red).

IMPORTANT DATES:

- Posters: Short abstracts (max. 150 words) and long abstracts (max. 4 pages), in free format: are due by **Jan. 31, 2005**.

E-mail submission is acceptable (send to: jorge.ibanez@uia.mx).

Acceptance and comments by reviewers will be notified by Feb. 28, 2005.

- Registration dates and costs:

Advance registration (by Mar. 31, 05): **USD 100** (please request bank transfer info)

On-site registration: **USD 150**

WE HOPE YOU CAN COME!!!

There will be the following

Microscale Chemistry book presentations:

- a) **Microscale Environmental Chemistry**. J. G. Ibanez, M. Hernandez-Esparza, C. Doria-Serrano, A. Fregoso-Infante and Mono Mohan Singh.
To be published in 2005
- b) **Microscale Chemistry for Middle and High School**. M. E. Ibarquengoitia, J. G. Ibanez, E. Garcia-Pintor.

The corresponding indexes are given below. The first book is written in English, and the second in Spanish (with a language less video of all its experiments).

a) Microscale Environmental Chemistry

INTRODUCTORY CONCEPTS

Chapter 1. Introduction: What is Environmental Chemistry?

Chapter 2. Chemistry Fundamentals for Environmental Chemistry

CHEMISTRY OF NATURAL ENVIRONMENTAL PROCESSES

Chapter 3. The Chemistry of Processes in the Atmosphere.

Chapter 4. The Chemistry of Processes in the Lithosphere.

Chapter 5.- The Chemistry of Processes in the Hydrosphere.

Chapter 6. Natural Biochemical Processes and Organisms in the Biosphere

ENVIRONMENTAL EFFECTS OF CHEMICAL PRODUCTS AND WASTES

Chapter 7. Effects of Pollutants on the Chem. of the Atmosphere, Hydrosphere, Lithosphere and on the Biosphere

PREVENTION, MINIMIZATION, AND TREATMENT OF POLLUTION

Chapter 8. Physicochemical and Biochemical Treatment of Pollutants

Chapter 9. The Minimization and Prevention of Pollution. Green Chemistry.

Experiments

Characteristics Of Surface Water, Groundwater (Mineral Water) And Sea Water Buffering Capacity

Measurement Of Dissolved Oxygen

Carbonate Equilibria.

The Presence Of Detergents In Water

Air Oxidation of Metal Ions

- Acid Rain (SO₂)
- The Effect Of Halogenated Hydrocarbons On The Depletion Of The Ozone Layer

Pourbaix Diagrams.

Metal Ion Recovery By Cementation

- Removal Of NO By Complexation

Photocatalytic Remediation Of Pollutants.

Chemical Mineralization Of Pollutants By The Fenton Reaction

- Acid Mine Drainage
- Production of Chloramines
- Chemical Production Of ClO₂
- Clean energy: A One-Penny Solar Cell
- Properties of oxides: Point of Zero Charge
- Photoassisted reduction of metal ions
- Electrochemical Treatment Of Gas Pollutants
- Electrochemical Treatment Of Water Pollutants
- Electrochemical Treatment Of Soil Pollutants

APPENDIX 1. ANALYTICALLY-ORIENTED ENVIRONMENTAL EXPERIMENTS IN THE LITERATURE.

APPENDIX 2. KEY INDUSTRIAL CHEMICALS: THEIR PRODUCTION AND USES.

APPENDIX 3. HAZARDS IN USING CHEMICALS. CHEMICAL HYGIENE PLAN (CHP).

b) MICROSCALE CHEMISTRY I (MIDDLE AND HIGH SCHOOLS)

Introduction.

Safety measures in the laboratory.

Experiment 1. Measurements.

Experiment 2. Density.

Experiment 3. Floatability and buoyancy.

Experiment 4. Substance recognition.

Experiment 5. Energy Transformations.

Experiment 6. Factors that affect reaction rates.

Experiment 7. States of matter.

Experiment 8. Distillation.

Experiment 9. Gas Diffusion.

Experiment 10. Hydrogen Obtention.

Experiment 11. Chlorine Obtention.

Experiment 12. Oxygen Obtention.

Experiment 13. Carbon dioxide Obtention.

Experiment 14. Effects of Pollution.

Experiment 15. Homogeneous and heterogeneous Mixtures.

Experiment 16. Paper Chromatography.

Experiment 17. Suspensions, colloids and solutions.

Experiment 18. Aqueous solutions.

Experiment 19. Crystallization.

Experiment 20. Groups in the periodic table.

Experiment 21. Chemical bonds.

Experiment 22. Electrolytes and non Electrolytes.

Experiment 23. Acids, bases, pH.

Experiment 24. Acidic and basic oxides.

Experiment 25. Neutralization Titrations.

Experiment 26. Effect of the variation of on proteins.

Experiment 27. Oxidation Numbers.

Experiment 28. Oxidation-reduction.

Experiment 29. Water Electrolysis.

Experiment 30. Clean up of polluted water with electrolysis.

Experiment 31. Electrolytic coatings.

Experiment 32. Hydrocarbons.

Experiment 33. Organic Substances as fuels.

Experiment 34. Polymers.

Experiment 35. Vitamin C content in juice.

Experiment 36. Carbohydrates.

Experiment 37. Obtention of soap.

Experiment 38. Water hardness.

Experiment 39. Separation of aspirin from an effervescent tablet.

Experiment 40. Photochemistry.

APPENDIX. Gas Obtention in syringes (Mattson's method).

Table of reagents

Bibliography