

The Project Place

for postgraduate training in polymer science.

Between 5 and 13 students have participated in the 11 sessions of the course that have been so far completed, with the number of students varying based on the funds that have been available. The course lasts 10 months and comprises about 50 hours of lectures in modern polymer science, including an introduction to the nomenclature and terminology recommended by IUPAC, experimental work on research projects under the supervision of senior scientists of the institute, and participation in all educational activities within the institute. The results of the research are published in international technical journals and presented at meetings. All told, the course has had 85 participants and boasts 119 papers published in international journals and 167 communications at international meetings.

This project is supported by IUPAC and is intended to enable young university graduates and Ph.D.s from countries with limited research facilities to acquire knowledge on recent advances in polymer science and given them the professional skills needed for to promote polymer science in their home countries.

For detailed information on the course, see www.imc.cas.cz/en/imc/unesco.html.

For more information and comments, please contact Task Group Chairperson Pavel Kratochvíl <krat@imc.cas.cz>.

 www.iupac.org/projects/2007/2007-049-1-400.html

Chemical Issues in Biomass Burning in Sub-Saharan Africa

A new project, endorsed by the IUPAC Subcommittee on Green Chemistry, proposes the preparation of a collaborative book exploring all the aspects relevant to biomass burning in sub-Saharan Africa, with special focus on the chemistry aspects.

Biomass burning implies emission of combustion products into the air (including greenhouse gases) and the waste/loss of biomass that could be utilized as valuable material resource. The extent of biomass burning in sub-Saharan Africa, and the complexity of the aspects involved, constitutes an important motivation to view it as a problem deserving priority attention and careful multisided investigation at the subcontinental level.

Chemistry can have multisided roles in its investigation, including:

- evaluation of the emission of combustion products into the air, and the comparison of its extent

with that of other pollution sources, to view the problem within a comprehensive picture of pollution-generating activities

- analysis of the impact on the humus composition and properties, an evaluation of actual or expected benefits, and the search for ways to ensure that any actual benefit will not be lost within alternative options
- estimation of the waste/loss of biomass
- design of alternative options and the estimation of their expected benefits and impacts

Important contributions to the understanding of the various aspects of the problem, and of the interconnections between them, can be expected from professional interactions between chemists and other specialists. It will be important for a variety of specialists to be involved, including:

- specialists in agriculture, because biomass-burning is extensively practiced in areas devoted to agriculture; therefore, the design of viable alternative options has to consider agriculture-related needs, with particular attention to subsistence agriculture
- specialists in forestry, because the needs of forests and reforestation initiatives may be different from those of areas devoted to agriculture
- meteorologists, for the consideration and estimation of the impact, on climate, of the emissions from biomass burning



Bush Fires in Southern Mozambique. Winter is the dry season in southern Africa and fires are set to hasten the greening of the grass shoots for cattle grazing. Source: Image Science and Analysis Laboratory, NASA-Johnson Space Center.

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- specialists in chemical education and education in general, to design effective ways of acquainting students with all the aspects of the problem
- specialists in territorial economy and communities studies, to evaluate the territorial contexts in which and purposes for which biomass burning is practiced, to identify optimal time and hierarchy sequences for its replacement with alternative options (targeting firstly contexts other than subsistence agriculture), and to participate in the design of options for subsistence agriculture that will not penalize it, but will be to its advantage
- specialists in fostering community participation, because any alternatives to existing practices need to be presented to communities in an informative way that helps to gain their consent; and because interesting suggestions for alternative options might come from communities

The proposed book is meant as a resource offering new insights on the issue of biomass burning in sub-Saharan Africa. It will include contributions from different countries in the region and will be prepared in such a way as to be accessible to students. Given the envisaged characteristics of the book, the contributions are not expected to duplicate research articles as published in research journals. Rather, they are expected to utilize research outcomes to explore:

- relationships between outcomes of different individual research (including comparisons and other investigations relevant to a better understanding of the subcontinental nature of the problem)
- possible alternative options to the current practice of biomass burning, taking simultaneously into account the needs of the environment and the need that subsistence agriculture be sustainable
- the role of chemistry and chemists in designing alternative options, predicting their impacts, and proposing/designing their implementation

By proposing to attract attention and disseminate information on the chemical aspects related to biomass burning and to the search for viable alternative options, the planned book is in line with green chemistry objectives and attitudes, above all in terms of pollution prevention (avoidance of the emission of gases, particles, and heat into the atmosphere) and economy-sound utilization of renewable resources (maximization of the products/benefits that can be obtained from biomass through options that are not purely destructive).

Finally, the book is also meant to serve as a prototype/model for analogous projects focusing on problems identified as “priority ones” for other groups of countries, subcontinents, or continents. Projects of this type would have a common set of motivations and objectives:

- selecting a problem that is of particular relevance for a large area
- highlighting the aspects that are common to the whole area
- devoting special attention to the chemical aspects of the problem and to the roles of chemistry in designing options to address the problem and ways of implementing them

This envisaged prototype role adds to the challenges of the project and to the motivations for pursuing quality in its realization, and expands its potential significance.

For more information and comments, please contact Task Group Chairperson Liliana Mammino <liliana@univen.ac.za>.



www.iupac.org/projects/2007/2007-025-1-300.html

Green Chemistry, Sustainable Development, and Social Responsibility of Scientists

The more than 3 000 chemists who came to Moscow in September this year to participate in the XVIII Mendeleyev Congress on General and Applied Chemistry had a chance to enjoy a true Indian summer—in Russia, known as a “woman’s summer.” The Congress was held in the headquarters of the Russian Academy of Sciences, situated in the green, southwest part of the city, not far from the bank of the Moskva river. From there, participants could enjoy the colors of the turning leaves, which seemed to emphasize the beauty of nature and our role in protecting it. So it was only fitting that during the congress, the international symposium on Green Chemistry, Sustainable Development, and Social Responsibility of Scientists took place.

The symposium was financially supported by the Russian Academy of Sciences, IUPAC, OPCW, the European Commission (through the Russian Regional Environmental Centre), and the Institute of Chemistry and the Problems of Sustainable Development at D. Mendeleyev Univ. of Chemical Technology of Russia.