

Reference Methods, Standards, and Applications of Photoluminescence

Measurements of the fluorescence properties of molecules are critical to the development of an understanding of the photophysics and photochemistry of the singlet excited state(s) of the species. A reliable and standard methodology is also required if published data are to be used to the photochemical community at large. Methods for fluorescence-decay analysis are also an integral part of the determination of the photophysical parameters of the species, as these time-resolved fluorescence properties are useful in spectroscopy, kinetics, energy transfer, analytical applications, and in characterization of chemical, biological, and physical systems which emit light.

The purpose of this new project is to review and update the two previous IUPAC documents covering this topic, namely "Reference Materials for Fluorescence Measurement," *Pure Appl. Chem.*, 60(7), 1107–1114 (1988) and "Recommended Methods for Fluorescence Decay Analysis," *Pure Appl. Chem.*, 62(8), 1631–1648 (1990). The project, which will include advances registered since the earlier publication, will emphasize newly developed reference materials and methods.

The fields to be covered by the project include calibration (spectra, quantum yields, decay times); procedures (steady-state, time-resolved methods including ultrafast techniques, single-molecule studies); and applications to biological (cells, organelles, membranes) and other microorganized systems (gels, films, solids, and, in general, complex environments, usually contaminated by light scattering).

A task group for the project, including nearly 20 experts from different specialties and countries, was formed and leaders for the different subtasks were nominated. The photochemical community is encouraged to participate by joining any of the subgroups. Communication will be performed through the project Web page, and a vast dissemination plan will be also devised. The project began mid-year in 2004 and will end at the end of 2006. Before final documents are written, advance reports and document drafts will be issued.

For more information, contact the Task Group Chairman Enrique San Román <esr@qi.fcen.uba.ar> or Fred Brouwer <fred@science.uva.nl>.



www.iupac.org/projects/2004/2004-021-1-300.html

Glossary of Terms Used in Biomolecular Screening

The field of biomolecular screening, an important component of the drug discovery process, has evolved rapidly in recent years. Along with the new technologies and techniques that are now routinely used in lead discovery and optimization have come new nomenclature and terminology. Biomolecular screening stands at a key interface with medicinal chemistry and biology in the drug discovery process. Effective communication between these disciplines and among scientists of different backgrounds is dependent on clear and consistent understanding and application of the terminology particular to the field.

This project, a collaborative effort between the IUPAC Chemistry and Human Health Division and the Society for Biomolecular Screening, seeks to provide an authoritative glossary of the terms commonly used in biomolecular screening.

For more information, contact Task Group Chairman John Proudfoot <jproudfo@rdg.boehringer-ingenheim.com>.



www.iupac.org/projects/2004/2004-019-3-700.html

Practical Studies for Medicinal Chemistry Guidelines

The goal of this new project, which is supported by the IUPACs Chemistry and Human Health Division, is to provide developing countries with a practical textbook on medicinal chemistry. The textbook will take into account the special characteristics and needs of developing countries, such as methods for using natural resources or the difficulty of paying for reagents or other materials. The project is intended to encourage postgraduate research in these countries in the area of new-drug discovery. It is hoped that this research can lead to drugs for forgotten diseases such as Tuberculosis, Malaria, and Chagas that principally affect developing countries and receive little attention from developed countries.

The major output of this project will be a book to be titled *Practical Studies for Medicinal Chemistry Students: An Integrating Approach for Developing Countries*, which will be made available in print and online. The text will be written in English, but some texts will also be in Spanish and Portuguese when provided by the authors.

The book will integrate information from a variety of disciplines involved in medicinal chemistry, such as organic synthesis, isolation, structural identification, structure-activity relationships, and biological activities. It will be possible to perform the experiments in the book with easily accessible materials, with starting products (natural products from the area, for example, economic reagents), and low-cost instrumentation.

An outline of the book is presented on the project Web page at the address below.

For more information, contact the Task Group Chairman, Antonio Monge Vega <cifa@unav.es>.



www.iupac.org/projects/2004/2004-028-1-700.html

Internationally Agreed Terminology for Observations in Scientific Communication

This two-year project based on the C-NPU generic database deals with properties that are observed in the medical laboratory, but not defined by the seven dimensions of the SI system. (The NPU is the Nomenclature, Properties, and Units in Laboratory Medicine coding). The VIM (International Vocabulary of Basic and General Terms in Metrology), which defines the primitive concepts of the SI system, is designed for metrology: the science of measurement. However, most scientific disciplines, not only laboratory medicine, also rely—some predominantly—on observation. Thus, this project intends to design a vocabulary shared by both observations and measurement. Developing a common framework to integrate the concepts of property, and in a more restricted sense of quantity, the project includes explaining to laboratory medicine workers the meaning of and usefulness of this view.

For more information, contact Task Group Chairman Françoise Pontet <francoise.pontet@wanadoo.fr>.



www.iupac.org/projects/2004/2004-023-1-700.html

Biophysico-Chemical Processes of Heavy Metals and Metalloids in Soil Environments

The objective of this project is to produce a reference providing the scientific community with a critical evaluation of the biophysico-chemical processes of metals and metalloids in soil environments. The evaluation, which is being conducted by a multidisciplinary group of soil and environmental scientists, will cover interactions with soil components (clay minerals, organics, microorganisms) as well as their speciation, mobility, bioavailability, and toxicity. It will also examine innovative restoration strategies for polluted soils.

The behavior of heavy metals and metalloids depends on chemical, physico-chemical, and biological factors associated with microbial activities. Dynamics and equilibria of these elements in soil environments are significantly influenced by structural, surface, and solution chemistry of soils and interactions of soil minerals with organic components and microorganisms. These physicochemical-biological interactions would influence the transfer of these elements from the inorganic and organic soil constituents to the soil solution and to plants.

Biogeochemical processes operating in soil environments that affect the fate, behavior, and bioavailability of metals and metalloids is currently an area of active research. Yet, a comprehensive and detailed book describing the current state of knowledge on the subject is absent from scientific literature. This book will bring a critical, qualitative and quantitative review of the fundamentals of the physics and chemistry of heavy-metal and metalloid interactions in soils, including the influence of soil microorganisms on these processes. In addition, the book will review the latest advances in spectroscopy and how they can be used to study various aspects of heavy-metal and metalloid interactions with inorganic and organic components.

The book will be co-edited by A. Violante, P.M. Huang, and G.M. Gadd.

For more information, contact Task Group Chairman Antonio Violante <violante@unina.it>.



www.iupac.org/projects/2004/2004-003-3-600.html