Fluorescence Anisotropy Measurements in Solution: Methods and Reference Materials (IUPAC Technical Report)

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The measurement of stationary and time-resolved linearly (or plane) polarized fluorescence in solution is an important method of investigating the physical and chemical molecular properties of the electronic structure and solvent-solute interactions of small molecules, the conformation and dynamics of natural and synthetic macromolecules, and more. In addition, a growing number of very sensitive and specific analytical methods are based on the determination of changes in fluorescence polarization. The theoretical aspects underlying the emission of polarized fluorescence are presented with great detail in a number of general and specific textbooks and journal publications. Conversely, the practical aspects of the corresponding experimental techniques, including the description of the most frequent sources of systematic errors that corrupt the measurement of polarized fluorescence intensity, are quite dispersed in the literature. As a consequence, the authors of this paper present a comprehensive discussion of spectroscopic methods used currently in the measurement of fluorescence polarization, both steady-state and time-resolved, focusing on those practices that provide accurate and reproducible values of fluorescence polarization from liquid solutions. Methods that are specific for fluorescence microscopy and multiphoton applications will only be touched on briefly, as far as they have consequences for the availability and applicability of polarization standards.

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Terminology for Aggregation and Self-Assembly in Polymer Science (IUPAC Recommendations 2013)

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In the past, aggregation and self-assembly have been associated principally with micellar and colloidal systems of molecules; however, with the advent of supramolecular chemistry, molecular self-assembly has been opened to a much wider understanding that has facilitated access to a variety of different shapes and sizes, along with the construction of new and fascinating molecular topologies. This document aims at defining more than 150 terms related to aggregation and self-assembly in the particular case of macromolecules. The list is restricted to the most commonly encountered terms.

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Rules for Abbreviation of Protecting Groups (IUPAC Technical Report)

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Twenty years ago, the number of abbreviations and acronyms in the chemical literature was reasonable. However, in recent years the number has increased so rapidly that their introduction in text and schemes does not necessarily simplify the reading and increase the understanding of scientific papers. In order to remedy this situation, a project was initiated, with the goal of presenting information in the scientific literature clearly and unambiguously. A set of rules for the abbreviation of protecting groups has been developed which is based on principles designed to be as descriptive and systematic as possible, but also sufficiently pragmatic and flexible so as to accommodate the most important current abbreviations.

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