

## ***Book Review***

### **Reviews in Fluorescence 2004**

Edited by C. D. Geddes and J. R. Lackowicz,  
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The appearance of Leonardo da Vinci's Universal Man on the cover provides a great start to this volume. Fluorescence is currently enjoying a kind of universality too, with applications ranging across the disciplines of medicine, science and engineering. So it is an opportune moment to compile this status report celebrating some of these.

Molecular sensors, whether they are dispersed in liquid solution or in polymer matrices, are key components of the fluorescence vanguard. Those featured here target chemical species such as sugars, intracellular zinc and chloride. Their medical potential is clear. Most of these, and other, sensors are specially synthesized for the purpose. However, major cases of endogenous molecules such as nicotinamide adenine dinucleotide (NADH) and green fluorescent protein (GFP) mutants are also discussed. Other chapters discuss molecular sensors which focus on physicochemical parameters such as polarity in biomembranes in connection with raft formation, protein interactions or phase transitions. Molecular sensors can zero in on physical properties too. The measurement of temperature receives welcome attention in this volume. Sensor ideas are generalized in another chapter to yield molecular information processors which perform logic and arithmetic operations. Yet another chapter provides an insightful combination of surface-bound sensors, distributed optical fibers and combinatorial chemistry. The latter area has benefited greatly from fluorescence before, and the future promises to be similarly beneficial. Several roles previously monopolized by molecular fluorophores are now receiving competition from semiconductor quantum dots which are highlighted within these pages.

Fluorescence continues to benefit from the influx of newer concepts. Several of these are also covered in this collection. Sometimes the concept is mechanistic such as photoinduced electron transfer (PET) or metal enhanced fluorescence (MEF). At other times the concept is procedural, i.e. fluorescence *in situ* hybridization (FISH) or fluorescence recovery after photobleaching (FRAP). Of course, the concept can also be technical such as single molecule spectroscopy, flow cytometry, fluorescence correlation spectroscopy or optical molecular imaging. Time-honoured concepts also continue to play their part in the field and in this book, though with new twists. Some of these are exciplexes for thermometry, modulation fluorometry on a low budget and fluorescence resonance energy transfer (FRET) combined with flow cytometry.

Since the fluorescence community is a diverse bunch, it is perhaps no surprise that some variability shows up in this volume. For instance, some articles are accounts of personal research odysseys whereas others offer wider-ranging reviews of the available literature on the topic in question. Another case is found in the formatting of references which takes something away from the presentation of this fine volume. This variability aside, 'Reviews in Fluorescence 2004' should be a very good ambassador for our field and promises to be the first in a long series.

Professor A. P. de Silva  
*School of Chemistry  
Queen's University  
Belfast BT9 5AG  
Northern Ireland*