



Ultrafast Biophotonics. P. Vasa and D. Mathur. Springer International Publishing, Switzerland. 2016. xi + 227 pages. Price: US\$ 129. ISBN 978-3-319-39612-5.

The importance of optical techniques in biology, biophysics and biochemistry is currently increasing at an enormous rate. Many variants of super-resolution microscopy are now commonly used in numerous research laboratories; single-molecule spectroscopy techniques are routinely applied and provide insight into energy transfer and other dynamical processes in biological systems. Electron microscopy is on the verge of probing the structure of individual proteins and – in combination with ultrafast laser sources – may even provide insight into their dynamics. Also, ultrafast spectroscopy provides further insight into the coherent dynamics of electrons and nuclei in biomolecules, in natural and artificial light-harvesting systems or – more generally – during light-induced charge-separation processes. This has initiated a lively debate about the role of quantum coherence in biology. Even spin coherence is argued to play a dominant role in migratory bird navigation by some researchers.

With so many recent developments, a book that covers the main underlying physical concepts, introduces the basics of the most relevant experimental tools and gives an overview of the recent achievements is urgently needed. This is exactly the aim of the book under review. The authors look at the emerging field of ‘ultrafast biophotonics’ from a fresh physical perspective and explain many of the underlying physical concepts in clear and pictorial terms. They also describe the most relevant experimental methods and provide an excellent overview of recent developments in different fields. The research topics that are covered in the book are naturally selected through the eyes of a physicist.

Quantum-coherent processes are covered in substantial detail and even the effects of strong laser fields on, for example, molecular photoionization are discussed. As such, the book introduces several concepts that are known in physics but are likely much less familiar to biologists. Thus the book definitely contributes to bridging an important gap between the two scientific communities, in particular also because the chosen list of references provides excellent resources for further reading.

In general, the book aims at young graduate students and researchers in ultrafast optics and biophotonics who need a timely and sufficiently broad overview of the field. It is clearly written and starts with a ‘nuts and bolts’ chapter that introduces the relevant physics background at a sufficiently elementary level. I expect that readers with a Master’s degree in physics will be able to follow most of the material. Also, those with a more biology-oriented background will certainly benefit from being introduced to the many optics techniques that are covered in the book, and their applications in biophotonics.

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Informal Sector Innovations: Insights from the Global South. Mammo Muchie, Saradindu Bhaduri, Angathevar Baskaran and Fayaz Ahmad Sheikh (eds). Routledge, London. Hardcover, 2016. 161 pp. Price: INR 9586. ISBN 13:978-1-138-94352-0.

Ever since the ‘discovery’ of informal sector by Keith Hart in the 1970s while

studying rural migrants from northern Ghana, this sector has gained prodigious attention from academics and policy-makers. Studies on the informal sector were largely confined to labour, wage, unemployment and poverty issues. Despite some studies and hotly contested debates, the knowledge potential of this sector was seldom recognized. It is only recently that this sector is viewed as a reservoir of knowledge and innovative activities. The dearth of appreciation for the innovative capacity of this sector was also due to lack of any available metrics or indicators which could have revealed the innovations in the informal economies to the outside world. This edited volume brings together 15 chapters by 28 researchers originally published in the *African Journal of Science, Technology, Innovation and Development*. It is a welcome contribution to the scant literature on the innovation potential of the informal sector of developing countries. It is organized into three parts, each dealing with different insights to the understanding of the informality within an economy and empirical evidence of innovativeness and innovation potential within it.

Part I of the book titled ‘Perspectives of informal economy’ addresses some contemporary viewpoints related to the informal sector that engender or contravene the innovative potential within it. It starts with Rivera-Huerta (chapter 2) exploring the conventional economic theories that have examined the informal sector till now. The author proposes that a better theoretical analysis of the informal sector is required to support policies by incorporating variables like institutional arrangements and modifying some assumptions related to agent rationality. The informality within an economy is often attributed to the low levels of formal education and skills of the workforce. Obeng-Odoom and Ameyaw (chapter 3) counter this argument by revealing a new informal economy in Ghana as ‘in formal informal economy’ comprising actors, who despite being highly educated and skilled, are failing to get formal jobs just like the cohort of informal workers who are failing to find jobs because they are not qualified. The contribution of the informal sector to the GDP of the developing countries is a fact. It is a source of major economic activities and hence the study by Akinwale (chapter 4) reveals the entrepreneurial potential of the undergraduate students of a private