A multi-dimensional approach to chemistry is developed with gripping events in the lives of the contemporary professional chemists. The extensive citations meticulously chosen from various sources have been quoted skillfully in appropriate and relevant places to provide interesting and enjoyable reading. Considering the wide range of students, researchers and readers searching for a good read, as the authors themselves have mentioned, a few more pioneers could have been included. Probably in another volume of this book some of the great Indian chemists like Acharya, P. C. Ray and Shanti Swaroop Bhatnagar could also be included. The book definitely captures the enthusiasm and intensity of the chemists, who spent long hours of the best time of their lives in dark, smoky and smelling laboratories, just to understand and explain the mysteries of the unknown areas of chemistry. Hence one can expect that the readers will gain the intended outcome of skills like scientific reasoning, problem-solving, clear communication and ethical commitment.

The book is recommended to every science college and university library. I hope that the publishers will soon bring out a less expensive paperback edition. The authors should be complimented for writing this book as a 'labour of love' for chemistry.

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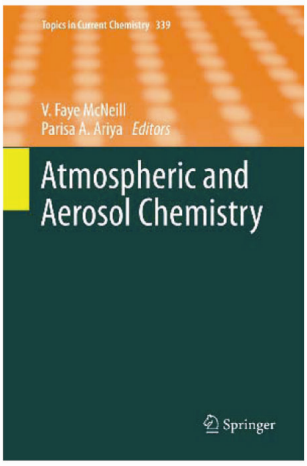


**Atmospheric and Aerosol Chemistry.** V. Faye McNeill and Parisa A. Ariya (eds). Springer International Publishing, Springer-Verlag, Berlin, Heidelberg. 2014. vii + 264 pages. Price: US$ 309.00. ISBN: 978-3-642-41214-1

Atmospheric chemistry of aerosols is important as it virtually implicate every single sectors like physico-chemical properties of aerosols, particle phase transformations, evolutions, interface interactions and scavenging mechanisms. Aerosol chemistry has long been studied due to its relevance to regulate regional and global climate. The complex chemical composition of aerosols especially in highly polluted regions like Indo-Gangetic Plain significantly induce modifications in regional climate[1,2]. A comprehensive assessment of air pollutants and their associated science includes transformation pathways which are fundamentally regulated by solar intensity and direct or indirect photochemistry of a molecule. Proper understanding of the mechanism behind these events provides opportunities to know more about the atmospheric processes and their association with the earth system. The Springer series on *Topics in Current Chemistry* is being published since 1949, with a staggering 402 volumes and is devoted to recognize past and contemporary chemical research, specifically explaining both conceptual and methodological aspects. Interestingly, aerosols chemistry has never been part of this book series, despite its explicit relevance in the era of aerosol-induced climate change. In this context, the book under review seems relevant and appropriate in emphasizing chemical behaviour of aerosols in regulating atmospheric chemical profiles. The book potentially addresses diverse readers like academics, researchers and industrial chemists, while it is relevant to scholars who wish to investigate aerosol photochemistry, tropospheric oxidation, aerosol organics and its role in mediating heterogeneous atmospheric chemistry. The editors have defined the scope of the entire book by discussing concepts in long-wavelength aerosol photochemistry, atmospheric chemistry of isoprene in remote areas, aerosol volatility, bio-organic chemicals and surface-active organics in atmospheric aerosols. We found the authors efforts as a balance between fundamentals, past results and recent advancements in the field of physical and chemical aspects of aerosols.

Discussion initiates with the chemical nature of atmospheric aerosols governed by long-wavelength photocatalytic mechanism in the gas phase, condensed phases and at environmental interfaces. Apart from the reaction mechanisms, the surface-initiated phenomena of aerosols are also elaborated. The wide range of these aerosols photolytic effects were only recently reviewed and have the potential to strengthen regional climate models. The authors also hypothesized about light-absorbing chemical constituents of aerosols which alter phase partitioning of intruding trace gases, which may well be significant in terms of photo-induced aerosol chemistry in an urban environment. Whalley *et al*. emphasize on reviewing recent advancements of biogenic volatile organic chemistry in forest areas through a combination of field measurements, laboratory experiments and modelling. Isoprene constitutes the major proportion of non-methane hydrocarbons and uncertainties in its oxidation, atmospheric chemistry constitute discrepancies in chemical transport model. The authors also highlight possible uncertainties associated with the isoprene oxidation mechanism which leads to difficulties in OH reactivity estimation and emission of secondary aerosols. Additionally, in lieu of differences in laboratory estimates and observation data, presence of multiple mechanisms regulating isoprene oxidation has also been hypothesized. Preceeding section deals with organic-aerosol phase partitioning and oxidative ageing of atmospheric organic aerosols. Aerosol volatility and phase partitioning are continuous evolving processes and thereby significantly interfere with aerosol

optical properties. Within this context, aerosol organic phase partitioning has been discussed in terms of partitioning thermodynamics and its limiting factors. Oxidative ageing has also been explained in terms of homogeneous and heterogeneous gas-phase and aqueous-phase oxidation.

Airborne bio-organic materials constitute a fraction of lower atmospheric aerosol loading and pose interferences on aerosol oxidative properties, cloud condensation nuclei, oxidative potential of the atmosphere and most importantly in transmitting diseases. The susceptibility of human and other life forms towards finer aerosols can be traced even up to the molecular levels[3,4]. Ariya *et al*. explore several techniques for physical characterization of such airborne bio-organic compounds and subsequently evaluate their advantages, and limitations coupled with uncertainties in measured dataset. Techniques like gas chromatography, fourier transform ion cyclotron resonance mass spectrometer and nuclear magnetic resonance are mentioned, while applications of several particulate collection devices are also discussed. Explanations seem relevant for the beginners but not the advanced users. These biogenic aerosols do interact with solar radiation and also act as cloud nucleation nuclei (CCN). However, aerosol–ice-snow interactions still lack understanding at the molecular level as it consists of significant level of uncertainties. In the concluding section, McNeill *et al*. discuss the development of organic surface films on aerosols and suggest the need of understanding its mechanism as a function of aerosol composition. Aerosol microphysical properties regulate its ability to act as CCN molecule and therefore, directly link with hydrological cycle and thereby, sustainability issues of the 21st century. Aerosol organics are typically hydrophobic, while some are amphiphilic and therefore surface-active. These surface-active aerosol species include organic acids, diacids, proteins and humic-like substances which also act as CCN. McNeill *et al*. discuss models as well as laboratory results for explaining the interaction between aerosol surfaces and organic compounds. Additionally, new research domains such as identifying organic surface films formation on aerosols as a function of its constituents, analysis of composition and functional group identifications and techniques for *in situ* detection of organic films, were also proposed for prospective scholars.

In conclusion, we appreciate the editors' intentions to bring the state-of-the-art knowledge on aerosol and atmospheric chemistry. The book may be useful to scholars who wish to investigate aerosol and atmospheric chemistry in perspective of changing climate. However, the book should be substantiated with more fundamentals, for example *Atmospheric Chemistry and Physics* by Seinfeld and Pandis. Inclusion of some topics like processes in the formation of new particles, chemical evolution of organics from primary to secondary particulates, metals in aerosol chemistry and aerosol–water vapour interactions may also be within the scope of aerosol chemistry. Thus, this book would be worthwhile acquisition for institutions, academicians and atmospheric scientists.

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**Annual Review of Nutrition, 2015.** Barbara A. Bowman and Patrick J. Stover (eds). Annual Reviews, 4139 El Camino Way, P.O. Box 10139, Palo Alto, CA94303-0139, USA. Vol. 35. x + 604 pp. Price: US$ 93.

Over the years, the relationship between diet and lifestyle diseases has elicited strong opinions and discussions. Historically, high-calorie, high-fat, especially high saturated fat diets have been associated with metabolic diseases, including obesity. Therefore, dietary recommendations in the 1970s and 80s focused mainly on reducing intake of saturated fat-rich animal foods like red meat. However, in the past decade, the blame has shifted to the consumption of processed foods and carbonated beverages which are rich in simple sugars[1,2]. In this context, it seems appropriate that this volume of the *Annual Review of Nutrition* (*ARN*) begins with the autobiography of George Bray, who has spent a lifetime researching to understand and elucidate various processes leading to obesity. The highlight of his work has been to establish that high-fructose corn syrup, which is used in sugar-sweetened beverages, leads to increasing incidence of obesity in the US. His view, that this single ingredient has led to the emergence of a new metabolic disease – non-alcoholic fatty liver disease (NAFLD), appears to be justified by the number of publications in this area in the last decade[3]. NAFLD, which occurs when fat is deposited in the liver due to reasons other than alcohol abuse, is currently the most common liver disease in developed countries. The etiology of NAFLD is not yet well understood. In this volume of *ARN* Martinez-Lopez and Singh offer a possible explanation for the same. Autophagy, specifically, lipophagy, which is the process of sequestration of cellular lipids into lysosomes, followed by degradation[4], is a tightly controlled process involving more than 30 autophagy (*Arg*) genes. Dysregulation of lipophagy results in hepatic lipid accumulation, leading to NAFLD. This opens up a new direction for research in the area of obesity and insulin sensitivity.

Although NAFLD has been reported in certain non-obese populations[5], it remains essentially one of the numerous metabolic problems whose primary cause is obesity. According to WHO, about 13% of the world's adult population was obese in 2014, and the global weight management market is currently estimated to be a US$ 385 billion industry. Long-term benefits of weight loss include improvement in health-related quality of life; however, the amount of weight loss required to achieve this remains controversial. In this volume, Rueda-Clausen *et al.* summarize the evidences available and suggest that while lifestyle modifications alone can only provide modest beneficial effects, combination with pharmacologic and surgical interventions has been effective in