



Editorial 69

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The latest issue of the journal opens with a historically oriented article on the development of green chemistry by Marques and Machado. These authors are from Universidade Federal de Santa Catarina in Florianopolis, Brazil, a country at the epicenter of many environmental issues, and from Universidade do Porto in Portugal. Coincidentally, as this editorial was going to press, the Nobel Prize for chemistry has just been awarded to the green chemistry pioneers of List and MacMillan (Krietsch Boener, 2021).

Lee Silverberg from Pennsylvania State University asks the seemingly simple question of “What is an organic substance?”. As the author writes,

... in the 193 years since Wöhler’s discovery, the distinction between “organic” and “inorganic” substances has not been agreed upon. The International Union of Pure and Applied Chemistry (IUPAC), which is the body that is considered the authority on chemical nomenclature, does not give definitions of “inorganic” or “organic,” and in fact states that “the boundaries between ‘organic’ and ‘inorganic’ compounds are blurred” (Hartshorn et al. 2015). This is rather surprising when one considers all the areas of nomenclature in which IUPAC does set out precise guidelines.¹

Raffaele Pisano and his colleagues from the University of Lille, in France, present a detailed historical account of the development of thermodynamics starting with Carnot and Clausius, before progressing to the statistical analyses of Boltzmann and Gibbs.

Sebastian Fortin and Olimpia Lombardi, from Buenos Aires in Argentina, contribute a response to a recent paper by the authors Franklin and Seifert. The latter claimed that the ongoing debate concerning molecular structure, and its relationship to quantum mechanics, should be subsumed under the more general question in the foundations of physics about decoherence and the collapse of the wavefunction. The Argentinian authors appear to strongly disagree with this view.²

Peter Nelson, a chemist at the University of Hull in the UK presents what he calls “a simple treatment of equilibrium”, in which he uses Boltzmann’s law instead of the more usual path via thermodynamics and statistical mechanics.

¹ One might also add the recent reluctance of IUPAC to make a ruling as to the composition of group 3 and on an official periodic table, despite the recommendations of their own working group whose conclusions were recently published (Scerri 2021).

² For what it’s worth, I’m with Franklin and Seifert.

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A team of Belgian philosophers of science from Ghent led by Erik Weber discuss whether quantum mechanical models of atoms provide legitimate explanations as discussed in the literature on scientific explanation. In the course of their article, they also delve into the question of whether such explanations may be considered to be of a “mechanistic” kind.³

Vlad Petrusevski writes from Russia to disagree with a recent article in which some authors claimed that he had excluded hydrogen from the periodic table due to the peculiarities of the H^+ cation.

We end with three book reviews. The first two are on the theme of chemical education. Keith Taber from the University of Cambridge gives a comprehensive perspective on a 500 or so page textbook on secondary education, by the chemical educators Reid and Ali. Secondly, Agustín Adúriz-Bravo, a well-known science educator from Buenos Aires, reviews a new book by Erduran and Kaya that is titled, *Improving chemistry teacher education with the philosophy of chemistry*. Sibel Erduran, with whom I have had the pleasure of writing some article, has been a pioneer in this particular area and it is very gratifying to see her book length treatment of the subject as well as the critical scrutiny that Adúriz-Bravo provides from the perspective of science education in general.

The issue closes with Peter Ramberg from Truman State University in Missouri who has written an in-depth review of a volume on the concept of ‘chemical element’ that I co-edited with Elena Ghibaudo from the University of Turin.

Reference

- Krietsch Boerner, L. Pioneers of asymmetric organocatalysis win 2021 Nobel Prize in Chemistry. Chem. Eng. News (2021). <https://cen.acs.org/people/nobel-prize/Asymmetric-organocatalysis-List-MacMillan-Nobel-Prize-Chemistry-organic-synthesis/99/web/2021/10>
- Scerri, E.R. (2021). Provisional report on discussions on group 3 of the periodic table. Chem. Int. 31–34 (2021)

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³ Talk of mechanism seems to be one of the most recent ‘band-wagons’ in the philosophy of science, following the mania for supervenience, downward causation and emergence, to name a few, and with apologies to the adherents of these philosophical themes.