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Philosophische und historische Aspekte des Periodensystems der chemischen Elemente

(Philosophical and Historical Aspects of the Periodic System of Chemical Elements)

by Ralph M. Cahn

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About the Author

Ralph M. Cahn was born in 1963 in Bonn where he began his study of chemistry before he moved to the Technical University of Munich to obtain his diplome in chemistry. He has been working for four years in radiochemical research for cancer therapy, first at the Institute for Radiochemistry in Garching and then at the Paul-Scherrer-Institute in Villingen, Switzerland. In 1995 he returned to Munich to study philosophy, logic, epistemology and history of science at the Ludwigs-Maximilians-University where he received his M.A. in 1999. His thesis was on the history and philosophy of the periodic system, the offspring of which is the present book. He is currently writing his PhD thesis on Ernst Cassirer and the 20th-century philosophy of science. Further research interests include 19th-century history of chemistry, Neokantianism, and liberalism. (Contact: alphachnr@hotmail.com)

About the book

In this book Ralph Cahn analyzes the logical structure of the periodic system of chemical elements and discusses the differences and similarities between various tables advanced by 19th-century chemists. After a survey of the historical and philosophical literature, the author suggests a more general and philosophically informed approach that allows for a critical epistemological history of the periodic system including its precursors. He argues that the periodic system is essentially a constitutional scheme consisting of relations, and discusses which combinations of scientific relations (atomic weights, elements, chemical similarities, etc.) are sufficient to constitute a law-like system. From such a general epistemological point of view, the development of these relations becomes an integral part of the history of the periodic system. Similarity applied to chemical elements (e.g. by Leopold Gmelin and Alexander Martius) deserves particular attention as an evolving relation as well as the rather neglected chemical system of Gustav Tschermak.

"*This treatise excellently combines epistemological and historical aspects for an analysis of classical chemistry. Indeed, attention is primarily concentrated on the theory of the periodic table but consequences of the results of this investigation reach far beyond, and concern the status of chemistry as a natural science and its difference with physics - an often neglected topic in epistemology. The inquiry might be interesting not only for historians of science and epistemologists but also for chemists who are willing to reflect about the nature of their discipline beyond the borders of their specific literature.*" ***Prof. Dr. C. Ulises Moulines, University of Munich***