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Book and Media Review

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# Review of *Up from Generality: How Inorganic Chemistry Finally Became a Respectable Field*

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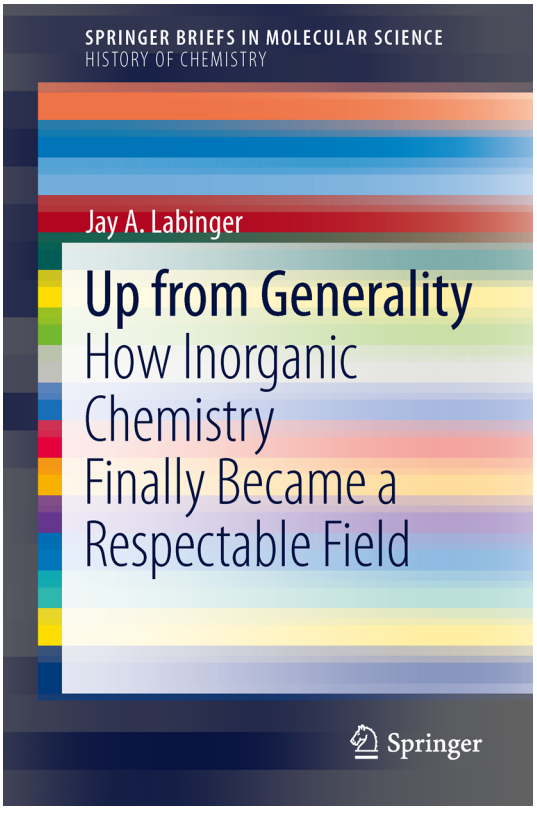
**Up from Generality: How Inorganic Chemistry Finally Became a Respectable Field**; by J. A. Labinger. Springer Briefs in Molecular Chemistry, History of Chemistry Series, Springer Publishing: New York, 2013. 77 pp., illustrations. ISBN: 978-3642401206 (paperback). $54.99.

When I read through a copy of the excellent history of the University of Tennessee Chemistry Department,[1] I am struck by two intertwined facts. First, I notice that instead of offering an introductory course grounded in physical chemistry as is done today, the early course has a basis in inorganic chemistry. Second, I notice that inorganic does not exist as a separate specialty until the late 1930s, when the department took on a wide-ranging rhenium project spearheaded by an inorganic chemist. George Schweitzer, that book's author and an inorganic chemist, told me on several occasions that he went to graduate school at the University of Illinois seemingly with nearly everyone in inorganic chemistry education in the United States, including two presidents of the American Chemical Society (ACS), the first editor of the journal *Inorganic Chemistry*, and one author of a major inorganic textbook. After reading J. A. Labinger's six-chapter epistle, *Up from Generality: How Inorganic Chemistry Finally Became a Respectable Field,* I now understand why.

In the initial chapter, Labinger mentions his own graduate work at Harvard that lends much to the viewpoint that pervades this text. As a prospective graduate student visiting Harvard, he wanted to study inorganic chemistry. However, the attitude toward inorganic chemists in their department—having denied tenure to such luminaries as Sir Geoffrey Wilkinson and not filling a senior professorship after interviewing Fred Basolo, Harry Gray, and others—made him wonder whether inorganic chemistry had always been treated with disdain in all circles. In Chapter 3, "The (Re)Birth of Inorganic Chemistry", Gray is recounted as having left Columbia University for California Institute of Technology (Caltech) because the majority of the Columbia department and the college dean believed that it could produce eminence only in a couple of fields, and inorganic was not one of them. Indeed, other stories tell the same tale.

Labinger, Director of the Beckman Institute in the Chemistry Department at Caltech, has provided a view of inorganic that partially begins with its development as a field at the University of Illinois under the tutelage of John C. Bailar, Jr. Bailar's research in coordination chemistry produced *four* students who went on to be president of ACS. His noted students included Fred Basolo, who was an outstanding inorganic chemist in his own right at Northwestern University. Along with Bailar's colleague, Therald Moeller, the two produced over 200 students trained in transition and rare-earth chemistry, and cofounded

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the Inorganic Division of ACS. Later faculty such as Russell Drago, Theodore Brown, and T. S. Piper continued the excellence into the 1950s, the era covered in Chapter 3. The fault I see in the Illinois history is an omission of Moeller, who went on to Arizona State University with his continued teaching excellence for another 15 years.

Labinger has a front-row seat to the other contribution to the formation of inorganic chemistry: the department at Caltech, starting with Donald Yost and Linus Pauling and carrying forward with Gray (Chapter 4). Labinger describes Yost as one who emphasized physical and thermochemical properties and who was a pioneer in Raman and microwave spectroscopies. However, for all his aptitude and inspiration for research, Yost was not a very good classroom instructor. He had his ways, as well. After World War II, he refused federal grant funding for his research, and he eventually turned his back on the





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department under the leadership of Pauling, mostly because Pauling and Yost hated each other with equal regularity. Because of this, Yost's contributions have tended to be forgotten outside his own department.

It is in Chapter 5, after second-generation inorganic chemists such as Basolo, James Collman, and Stephen Lippard began to make major contributions to the field, that we now see a shift in the attitudes toward the field. Nobel Prizes were won by Wilkinson and Henry Taube, the aforementioned ACS Inorganic Division was separated from the Physical Division, and progeny from later generations of Bailar's students were also beginning their careers and becoming recognized in organometallic chemistry and mechanistic inorganic chemists.

Labinger does not focus very much on the initial development of "inorganic chemistry", such as the development of the periodic table (Chapter 2). He does mention, however, that indeed the inorganic chemistry course of the early 1900s did eventually evolve into today's introductory sequence. He also does not focus on radiochemistry and nuclear chemistry at all, which in my opinion negates a subfield of inorganic as important as transition metal chemistry or bioinorganic, with the developments in the latter field mentioned in Chapter 6. His reasoning is that much of the work was derived from physical chemistry; however, with radiochemists such as Greg Choppin having produced research and students hand-over-foot, inorganic chemists continue to have strong representation even today. I would like to see an expanded version of the book that focuses on inorganic research on the European continent. Although Labinger mentions Pauling and his relationship with chemistry in general, I would like to read a discussion of the contributions of F. Albert Cotton, especially as a student of Wilkinson. Though there are some who would vehemently disagree with me in the same manner that Cotton disagreed with others, one cannot deny the influence of Al Cotton in inorganic chemistry today.

This is a well-written book that I found extremely interesting. However, the publisher could have put a little more effort into the publication. The pictures are black and white and not very good. Also, the $54 cost for a slim volume such as this is prohibitive for most budgets, including mine. In the meantime, when I pull out my copied version of *Project ACAC*[2] or have my students determine the coordination number of silicon in the hexafluorosilicate ion, I can thank John Bailar and Therald Moeller. I can also thank (directly or indirectly) John Alexander, Richard Elder, Harry Gray, Bill Jensen, Barbara and Noel Hallinan, Bodie Douglas, Jim Niewahner, Jim Huheey, and most of all, George Schweitzer.

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### Notes

The authors declare no competing financial interest.

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