Journal of Solid State Chemistry **165,** 207–208 (2002)
doi:10.1006/jssc.2002.9601, available online at http://www.idealibrary.com on IDEAL®

EDITORIAL

Professor Achim Müller Awarded 2001 Sir Geoffrey Wilkinson Prize

It is a great pleasure to announce that the 2001 Sir Geoffrey Wilkinson Prize has been awarded to Professor Achim Müller from the University of Bielefeld, Germany. Professor Müller is one of today's leading international scholars on the subject of soluble metal oxides and sulfides. He is an immensely creative and highly successful inorganic chemist with extremely broad interests, and his work includes the synthesis of the first discrete pure metal–sulfur clusters (e.g., $Mo_3S_{13}^{2-}$) as well as of the first isopolythioanions ($W_3S_9^{2-}$); the introduction of the unusual thiometalate ligands in the field of complex chemistry; template-directed organization of metal-oxide cluster shells; new aspects of inorganic host–guest chemistry; and contributions to the development of supramolecular magnetochemistry. One of his most remarkable achievements is the discovery of the "Bielefeld giant wheel" polyoxomolybdate. The largest molecular cluster structurally characterized at the time, it caused a worldwide sensation. Professor Müller and his co-workers have developed novel concepts for handling highly complex molecular nanostructures, which are among the most fascinating problems of contemporary inorganic chemistry.

The 2001 Sir Geoffrey Wilkinson Prize will be presented to Professor Müller by Professor Barry Lever on July 22, 2002, during the XXXV International Conference on Coordination Chemistry in Heidelberg, Germany. The presentation will be followed by a Prize Lecture.

The Sir Geoffrey Wilkinson Prize, previously designated the Polyhedron Prize, was renamed after the late Professor Geoffrey Wilkinson, the Prize's first recipient in 1989. As one of Elsevier's most prestigious awards, it has been designed to pay tribute to creativity in the field of inorganic and organometallic chemistry. The winner receives from Elsevier Science a commemorative medal accompanied by a check for US$10,000. The selection committee for the 2001 Prize consisted of Professor F. Albert Cotton, Professor Akio Yamamoto, and Professor Lord Jack Lewis. Past winners include Professor Richard H. Holm (1991), Professor M. Frederick Hawthorne (1993), Professor F. Albert Cotton (1995), Professor Lord Lewis (1997), and Professor Herbert Roesky (1999).

Biographical Sketch of Professor Achim Müller

Achim Müller studied chemistry and physics at the Georg-August University in Göttingen, where he received the Ph.D. under the supervision of Oskar Glemser with a thesis about experimental thermochemistry in 1965 (his subject included theoretical physics) and only 2 years later, in 1967, his habilitation with a thesis in the field of vibrational spectroscopy.

In 1971 Achim Müller became associate professor at the University of Dortmund and thereafter, in 1977, accepted the Chair of Inorganic Chemistry I at the University of Bielefeld, where he has since remained even though he was offered an honorary professorship at the University of Saarbrücken as successor to Professor F. Seel.

With regard to research, Achim Müller's interests and achievements are extremely broad and range from (synthetic) transition metal chemistry and supramolecular chemistry, through inorganic structural chemistry, electronic structure of transition metal complexes and clusters, vibrational spectroscopy (matrix isolation, band-contour analysis, resonance Raman effect), molecular physics (theory of heavy atom substitution on molecular constants), and heterogeneous catalysis (desulfurization of crude oils) to bioinorganic chemistry (biological nitrogen fixation, including microbiological and biochemical investigations). Recently he even extended his knowledge to the realm of natural philosophy and public understanding of science, in which he has already published his first papers.

The results of his widespread chemical investigations have been recorded in more than 700 publications and received extreme resonance in the scientific community. An exceptional aspect is that the papers were published in ca. 70 different journals specific to the above-mentioned fields. In addition, he is the author of more than 40 reviews and editor/co-editor of 10 books, again dealing with all the above-mentioned fields. One of his reviews was commented on by a referee as "… a beautifully idiosyncratic approach and a joy to read. Would that more chemists dared to approach their work with such panache and breadth of vision!"

The international scientific reputation of his research work can also be inferred from the fact that about 50 postdoctoral fellows and guest professors from many different countries have come to Göttingen (the first in fact prior to his habilitation), Dortmund, and Bielefeld. In addition, Achim Müller has for many years been one of the most cited authors in science worldwide (Science Citation Index of ISI).

0022-4596/02 $35.00
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In the course of his entire scientific career he has maintained a remarkable collaboration, also on an interdisciplinary level, with many groups in very different parts of the world. The scientific results have also been presented in more than 60 invited, plenary (including opening), and named lectures at international conferences.

With regard to his research topics—focusing here only on inorganic chemistry—he can be considered one of the internationally leading authorities on the subject of soluble metal oxides and sulfides, with many essential impulses coming from him. The following key points furnish proof for this statement: the synthesis of the first discrete pure metal–sulfur cluster (e.g., $Mo_3S_{13}^{2-}$ besides $Mo_2S_{12}^{2-}$) and the first polythioanion ($W_3S_9^{2-}$), the discovery of the simplest ferredoxin model ($[Fe_4S_4(SH)_4]^{2-}$), the introduction of unusual thiometalate ligands such as MS_4^{2-} (M = Mo, W) into the field of complex chemistry in connection with the discovery of their important ability to show internal redox processes, the unprecedented use of template-directed organization of metal-oxide cluster shells, the development of new principles of inorganic host–guest chemistry, contributions to supramolecular magnetochemistry (some of his clusters became favorable objects of investigation in magnetochemistry and in the physics of magnetism), and in more recent years the spectacular discovery of the "Bielefeld giant wheel" polyoxomolybdate—at that time with 154 metal atoms the largest molecular cluster structurally characterized (his record now being 264). The species was isolated from a molybdenum blue solution which chemists had been probing for more than 200 years since the time of Scheele and Berzelius. In this context Professor Achim Müller and his co-workers have developed novel concepts for handling highly complex metal-oxide-based molecular nanostructures to perform well-defined reactions at well-defined sites of structurally well-defined nanoobjects/clusters, thus dealing with one of the most fascinating problems of contemporary inorganic chemistry. In this sense the discovery not only of chemical reactions, i.e., nucleation processes, inside the cavity of spherical and ring-shaped nanoclusters but also of the possibility of linking or cross-linking these in distinct predefined ways even in room temperature solid state reactions (crystal engineering) are highlights.

An important step was clearly to form and to use pentagonal building units. In agreement with the paradigm of Buckminster Fuller, this allowed the synthesis of sizable spherical nanoclusters with icosahedral symmetry (inorganic fullerenes, or so-called keplerates), for instance, those with 132 and 102 metal atoms. The planned synthesis of a new type of supramolecular species with host–guest topology (a quantum dot within a magneto dot) with an encapsulated cluster (Keggin ion), which fits exactly into an unusual spherical nanocluster (the largest molecular paramagnet with 30 Fe^{III} centers), was commented on by a referee as follows: "… the readership will likely experience the same type of progression that I did upon reading it: initial surprise ("Surely this cannot be!"), then curiosity, subsequent admiration, and finally lingering thought-provoking reflection."

Achim Müller's achievements have been recognized worldwide. His work has been highlighted in *Nature* and in *Science*, as well as by global newspapers and magazines, not just because of the mere beauty of the molecular entities he produced, but also because of the perspectives.

On account of his extremely wide range of scientific activities and indeed his conception of science in general, he has been acknowledged with *doctor honoris causa* and honorary professor degrees, honorary memberships in science institutions, and other important awards (Alfred-Stock-Gedächtnispreis (GDCh), Prix Gay-Lussac/Humboldt of the Ministère de la Recherche, Paris). He has been a member of editorial boards of many internationally renowned journals and is an elected member of several academies (e.g., Polish Academy of Sciences, Deutsche Akademie der Naturforscher Leopoldina, and Academia Europaea, among others).

Professor Achim Müller is a most deserved winner of the 2001 Sir Geoffrey Wilkinson Award, and we extend our congratulations to him on this important occasion.

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