

## **BIOGRAPHICAL SKETCH**

DR. THOMAS A. HOLME

Dr. Holme is Director of the Examinations Institute of the ACS and a professor of chemistry at the University of Wisconsin-Milwaukee. He and his research group carry out computational modeling studies of physiological implications of molecules that include main group elements, particularly boron and silicon. As Director of the Exams Institute he also has a significant interest in research that focuses on how to assess learning of chemistry. The application of emerging information technologies in the assessment of student knowledge composes the main thrust of his research interests in Chemical Education. Dr. Holme is also active in Chemical Outreach. He was the recipient of the 1999 Helen Free Award for Public Outreach from the ACS and is always happy to help Local Sections with publicity efforts for their meetings when he visits.

## **ABSTRACTS**

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### **Boron: It's Not Just For Rocket Fuels Anymore**

As an element involved in important compounds, boron has a rich history. The rocket fuels programs in the 1950s were followed by its use as hydroborating agents continuing to today. Increasingly, compounds that contain boron have been found to have surprising physiological activities. First proposed for usage in boron neutron capture therapy (BNCT), a variety of boron-containing compounds have been synthesized and screened for biological activity. This talk will focus on those compounds that contain boron-nitrogen dative (or adduct) bonds. The history of this synthetic effort with its origins in BNCT will be noted as well as some of the more intriguing biological behaviors such as lowering of cholesterol levels and anti-inflammatory actions. The possible role of Lewis acid-base chemistry and the use of computer modeling to investigate that role will be discussed.

### **Chemistry, Society, and Science Fiction**

Science fiction has long served as a vehicle by which non-scientists encounter science topics. The use of science fiction as an organizing theme has a long history for classes for non-science majors. This talk reflects on past efforts and emphasizes the methods used by the speaker in his own "Chemistry and Science Fiction?" course. Current trends in science background for SF stories will be noted and ways to introduce both a scientific and literature perspective will be addressed. A discussion of how SF tends to extrapolate from sound chemical principles to more speculative fiction will provide opportunities for audience participation.