the fission product

THE RHODE ISLAND SECTION OF THE AMERICAN CHEMICAL SOCIETY
"THE FIRST SECTION"

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Outstanding Chemistry Majors to be honored

Each year the Rhode Island Section honors an outstanding major from each of the four-year chemistry and chemical engineering programs in the state. This year's awardees will be the section's guests at the Annual Poster Session at Providence College.

Chemistry Teacher Award to Mary Kutcher

The 2009 RIACS Outstanding Chemistry Teacher Award will be presented to Mary Kutcher, chemistry teacher at South Kingstown High School.

Science Fair Award

Angelica Muscatelli, a student at St. Mary Academy Bay View, received the RIACS award for her outstanding project, "What's in your oils?" at the Rhode Island Science and Engineering Fair on March 21 at CCRI.

50-Year Members

Fifty and sixty year members of the ACS in the Rhode Island Section will be recognized at the dinner.

Electronic Communications

If you wish to receive the Fission Product by e-mail as soon as it becomes available and are not on the ACS e-mail list, send a message to jmagyar@ric.edu and ask to be added to the list. If you no longer wish to receive the electronic version, also send a message to the above address. The *Fission Product* is also available on the web at http://membership.acs.org/R/Rhodeisland/.

ACS offers special benefits for unemployed members

During these tough economic times it's more important than ever to belong to the American Chemical Society. Unemployed members can tap into a host of valuable benefits and services that help them get back in the workforce. And, members in good standing may qualify for an unem-

April Meeting

2009 Poster Session and Awards Night Thursday, April 30, 2009

Slavin Center Providence College Providence, Rhode Island

Students, faculty, researchers, industrial scientists, medical researchers: all are invited to bring posters of their research to the Rhode Island Section's 2009 Poster session. The audience will be friendly, informal, and enthusiastic. Undergraduate and graduate students are particularly encouraged to present their work. Posters should be no more than 6 ft wide and 4 ft high. Please bring your poster mounted on a poster board. Easels will be provided. Prizes will be awarded for the best undergraduate and graduate student posters. To present a poster or for more details contact Kathy Coppola at Providence College, kcoppola@providence.edu or (401) 865-2379.

The Poster Session will be held in the Upper Level of the Slavin Center. Please look for the signs once you enter the building. The dinner will be on the lower level.

5:15-5:30	*Set up Poster*
5:30-6:30	*Poster Session and Reception*
6:30	*Dinner*
7:30	*Awards Presentations*

Reservations should be made with Ms. Kathy Coppola at 401-865-2379 by 4:00 PM on Friday, April 24th. The price of the dinner is $15 and $5 for students.

ployed member dues waiver, allowing them to renew their memberships and keep their member benefits at no cost. Contact ACS at service@acs.org, 800-333-9511 or 614-447-3671 for complete details.

Other valuable benefits that help ACS member get back in the workforce include:

- Free registration at ACS National Meetings and registration fees at Regional Meetings of just $25. Meetings offer ACS Career Fairs with on-site interviews.
- Special discounts for ACS/Harvard courses, ACS ProSpectives and Short Courses, and the ACS Leadership Development System.
- Membership in the ACS Network, your online resource to connect and communicate with friends, colleagues, and potential employers
- Free Guidance from ACS Career Consultants – ACS mentors offer resume reviews, job search strategies, and interview tips that make you stand out from the rest.
- Free access to InterviewStream, an online tool that will sharpen your interview skills
- Members-only access to the ACS Salary comparator.
- And more!

Contact ACS customer service today at service@acs.org, 800-333-9511 or 614-447-3671 today and let us know how we can help.

This Month in Chemical History

By Harold Goldwhite

April, like most months, is rich in anniversaries of scientists who made major contributions to chemical sciences. Among them are James Watson, Robert Woodward, Carl Lindemann, and Glen Seaborg. But I choose to discuss the career of a great physicist whose work made such an impact on our science that it changed the thinking and work of every chemist who followed him. I refer to Max Karl Ernst Ludvig Planck, born in Kiel, Germany, on April 23 (a birthday he shares with Shakespeare), 1858.

The Planck family had, in common with the family of J. Clerk Maxwell, a long history of public service as lawyers, scholars, and clergymen. Planck's father was a professor of law. The family moved from Kiel to the independent state of Bavaria when Max was 9 years old. He attended the Maximilian Gymnasium in Munich, where he chose an emphasis on physics over music (he remained an excellent pianist all his life), perhaps through the influence of his physics teacher H. Muller. His experience for his first 3 years at the University of Munich was less inspiring, and he transferred to Berlin, where he encountered two distinguished physicists as teachers. Kirchhoff, the collaborator of Bunsen in spectral analysis, apparently delivered his polished lectures in such a manner as to put many in his audience to sleep. Helmholz, the great expert on electrical and optical phenomena, was often unprepared and difficult to follow.

Planck read widely in physics and decided to specialize in thermodynamics, after reading some of Clausius's work. His doctoral thesis, which included a critique of Clausius's views on irreversibility, was successfully submitted to the University of Munich in May 1879. It is worth noting that some of Planck's results had already been published by J. Willard Gibbs in a very long article published in the somewhat obscure *Transactions of the Connecticut Academy of Sciences*, an article that was not brought to the attention of the European thermoynamicists for decades. On the strength of his thesis, Planck was appointed Privat-Dozent at Munich and then in 1885 was called to Kiel as Extraordinary Professor of Theoretical Physics.

In 1889, on the death of Kirchhoff, the prestigious University of Berlin asked Boltzmann to succeed him. Initially, he accepted, but then changed his mind. In his place, the somewhat unlikely choice was the young 34-year-old Planck, who was appointed Professor in 1892, becoming a colleague of the great Helmholz. Planck remained at Berlin for the rest of his professional career, retiring in 1928. His successor was Schroedinger.

Planck's work before he ascended to the Berlin Chair was collected in his important thermodynamics text, published in 1897, and included discussion of chemical potentials and their applicability to equilibrium constants; dissociation of real gases; and the thermodynamics of colligative properties, including freezing-point depression and osmotic pressure. These treatments of really fundamental chemical and physical problems led him to the forefront of classical thermodynamics.

At Berlin, he began to turn his attention to emissivity phenomena, the so-called black-body radiation. His predecessor, Kirchhoff, had provided theoretical backing for the observations that the distribution of radiant energy with wavelength (or frequency!) emitted from a heated enclosure did not depend on the material of the enclosure. It was therefore a quite general or universal result. In 1893, Wien had used experimental data to derive his displacement law, which connected the enclosure temperature with the frequency of maximum energy output. The efforts of some of the best physicists of the day, including Rayleigh and Jeans, were able to explain parts of the Wien law at low frequencies and high temperatures, but failed at other extremes. The field was open for Planck's efforts.