

UI physics professor receives Humboldt Research Award

By Sarah Scalia

News Bureau Student Intern

Ian Robinson, a UI professor of physics, has received a Humboldt Research Award from the Alexander von Humboldt Foundation in Bonn, Germany.

The award, worth up to 75,000 Euros (about \$97,000 at current exchange rates), entitles Robinson to carry out research projects of his own choice in cooperation with colleagues in Germany. The projects can last from six months to one year.

Each year the foundation grants up to 100 Humboldt Research awards to scientists and scholars with internationally recognized academic qualifications. The awards honor the lifetime academic achievements of the winners.

Robinson is conducting his research at the Max-Planck Institute for Metals Research in Stuttgart, Germany, with Harald Reichert. Robinson is spreading his research over several trips, first visiting for a month in November, then again in February. He will return to Germany in May and continue his research into 2006.

Humboldt awards are considered among the highest honors given to internationally recognized scholars. The winners must be nominated by established researchers working at universities or other research institutions in Germany; direct applications are not accepted. Former recipients include George Olah of the University of Southern California, who won the 1994 Nobel Prize for chemistry, and John Anthony Pople of Northwestern University, who won the 1998 Nobel Prize for chemistry. UI pro-

fessor of general engineering Mark Spong won a Humboldt award in 1999.

The research Robinson will conduct while in Germany deals with electrochemistry of lead-acid batteries and the metal-electrolyte interface that was described by Hermann Helmholtz in the 1800s.

Helmholtz concluded that the binary ionic fluid would coat a charged electrode with a double layer of ions. Although the existence of Helmholtz's double-layer is not realistically disputed, the majority of evidence used to support its existence is indirect. Currently, the direct evidence for the existence of Helmholtz double-layers is elusive and there is no direct experimental proof. The most effective method to probe the layers and measure different densities is to use X-ray reflectivity, which is a small-angle X-ray scattering technique tuned to the layering of the interface ions. The X-ray scattering should be able to detect the different densities in the layers and confirm Helmholtz's theory of double-layer ions, thus explaining the electrochemistry in lead-acid batteries.

Robinson, who joined the UI faculty in 1992, received his doctorate in biophysics from Harvard University in 1981, after receiving a master's in physics from Cambridge University in 1976. While working at AT&T Bell Labs in Murray Hill, N.J., from 1981 to 1992, Robinson helped develop and implement an X-ray surface diffraction beamline at the National Synchrotron Light Sources at Brookhaven National Laboratory. ♦