

BRABEC WINS 1990 APKER AWARD FOR MODELS OF AMORPHOUS SOLIDS

Charles J. Brabec's outstanding academic record coupled with his demonstrated ability and promise in independent research have won him the 1990 Apker Award for undergraduate achievement in physics, which is sponsored by The American Physical Society. Brabec, who majored in physics at North Carolina State University, was cited for his thesis on "Computer Modeling the Structure of Amorphous Arsenic Trisulfide."

Brabec will receive the award at the joint meeting of APS and the American Association of Physics Teachers in January, when he will present a talk on his work. The award carries with it a \$3000 prize.

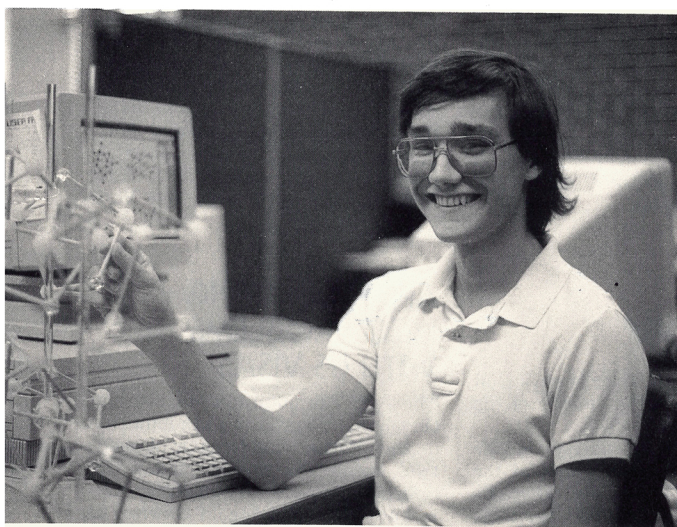
For three years, Brabec worked on

modeling amorphous solids as part of the research group of his adviser, Michael Paesler, a professor of physics at North Carolina State. Paesler said in his letter recommending Brabec that his advisee began with stick-and-ball models and progressed to sophisticated computer-generated models. Eventually, Paesler said, Brabec took "the lead in the program and has driven the modeling efforts of our research group to a point where his models were received as some of the most physically meaningful models of amorphous solids yet constructed." Brabec presented a paper on the subject at the 1989 International Conference on Amorphous and Liquid Semiconductors, held in Asheville,

North Carolina.

Paesler noted that Brabec's software for transferring models to videotape is now included in the public domain software at supercomputer centers across the US. Brabec also authored as an undergraduate two papers that appeared in refereed journals; he was co-author on a third.

Nominations for the Apker Award are solicited nationwide; the Apker judging panel then narrows down the field to four finalists, who are invited to New York to present their work. Of that interview, Brabec said, "Initially I was nervous since the panel included Nobel Prize winners. But the atmosphere was very relaxed and my talk went well. They did ask some



Charles Brabec (above), the 1990 Apker Award winner, shows off an early model of arsenic sulfide that he constructed. Starting with such stick-and-ball models, Brabec developed methods for constructing large models entirely on the computer. To develop the models, he had to determine a realistic interatomic potential that incorporated the interaction between lone-pair electron orbitals. By comparing spatial correlation in the model with the actual material out to the third-nearest neighbors, he was able to determine the possible intermediate-range order structures in this amorphous solid.

Other Apker finalists (below, from left): Scott D. Stoller, Thomas J. Lenosky and Luis Chi Ho.



Massey Resigns as Vice President for NSF Job

Walter E. Massey has resigned his position as APS vice president having been nominated director of the National Science Foundation (see *PHYSICS TODAY*, October, page 55). If Congress confirms him, Massey will take office immediately, succeeding Erich Bloch.

APS leadership is grateful for Massey's service to the society and wishes him well in his position at NSF. Massey would have succeeded Nicolaas Bloembergen as APS president-elect in January 1991 and would have become president the following year. In accordance with the APS constitution, Massey's place in the presidential line will be assumed by Ernest M. Henley of the University of Washington, who was elected vice president in this fall's election (see *News from APS* in next month's issue of *PHYSICS TODAY*). A special election will be held in 1991 to select a new vice president for the slot vacated by Henley.

tough questions, however." Among other things, Brabec was asked to explain the x-ray absorption fine structure data that he had used in his work. "I understand this technique fairly well," Brabec said. "Of course it helped that the co-inventor of the XAFS technique, Dale Sayers, is a physics professor at North Carolina State. I had discussed these experiments with him and Professor Paesler."

In recommending Brabec, physics department head Richard Patty

called him "one of the finest testaments to our mission to educate undergraduate majors." He described Brabec's academic record as "near perfect."

Another North Carolina State alumnus, Michael Fulbright, was a finalist for last year's Apker Award. Fulbright and Brabec attended the same high school in Raleigh—Enloe High School—and were pupils of the same physics teacher—Elizabeth Woolard.

The Apker Award was established in 1977 by an endowment from Jean Dickey Apker in memory of her husband, LeRoy Apker, a solid-state physicist. By tradition, the selection panel is chaired and vice chaired by past presidents of APS. This year's selection panel was chaired by Val Fitch of Princeton University, who was APS president in 1987 and 1988; the vice chairperson was James Krumhansl of Cornell, who was president in 1989.

The other finalists, their undergraduate institutions and their thesis topics were: Scott D. Stoller, Princeton University, "A Numerical Investigation of the Eigenvalues and Eigenfunctions of the Operator $D(d^2/dz^2) + ibz$ "; Thomas J. Lenosky, Caltech, "Multiple-Pulse Sequences for Magnetic Resonance Imaging of Solids"; and Luis Chi Ho, Harvard University, "Ammonia Aperture Synthesis Observations of Molecular Cloud Complex in the Galactic Center." The three finalists each received \$500.

Predictably, this year's winner and finalists have all gone on to graduate physics work. Brabec is now at Princeton, Stoller and Lenosky at Cornell and Ho at the University of California, Berkeley.

of research equipment, including a scanning electron microscope, a Cray minisupercomputer and a LEED-Auger surface analysis system. The equipment, purchased through funds from the Pew Charitable Trust, is dedicated exclusively to the undergraduates, with some access given to senior researchers who serve as mentors. Balasubramanian has been working with students using the Cray computer.

In the spring Balasubramanian will be a faculty member in the Keller physics program at the University of Michigan. The Keller program is an alternative to the school's standard physics sequence that allows students to work at their own pace through a series of study units. Calculus-based courses in electricity, magnetism and mechanics are offered. Undergraduates who have already taken the course serve as tutors, with supervision from graduate teaching assistants and faculty members, one of whom will be Balasubramanian.

The American Association of Physics Teachers has also offered to support Balasubramanian, by enabling him to participate in its meetings and by providing introductions to physics teachers.

Eligibility for the Ramavataram Fellowship is limited to undergraduate physics teachers in India with at least 10 years of experience who have demonstrated a commitment to improving physics teaching. The Indian Physics Association and the Indian Association of Physics Teachers compile a list of candidates, from which the APS Ramavataram Fund Committee selects a winner. Further information can be obtained from APS, 335 East 45 Street, New York NY 10017.

BALASUBRAMANIAN IS THE FIRST RAMAVATARAM FELLOW

APS has selected Gopalakrishnan Balasubramanian, a senior lecturer in physics at the American College, Madurai, as the first Kilambi Ramavataram Fellow. The Ramavataram Fund was established in 1983 through donations from family and friends of Ramavataram, an Indian-born teacher and researcher in nuclear and molecular physics (see *PHYSICS TODAY*, June 1984, page 51, and December 1984, page 85). The fund's aim is to improve undergraduate physics teaching in India by allowing Indian physics teachers to visit institutions in North America, to observe and study teaching methods. Rama-

vataram was a professor of physics at L'Université Laval in Quebec at the time of his death in 1977.

Balasubramanian arrived in the US in September and is now at the Johns Hopkins University, where he is participating in the Pew Charitable Trust undergraduate laboratory program. Next spring he will observe the Keller physics program at the University of Michigan.

The Pew Charitable Trust undergraduate laboratory program is a new program at Johns Hopkins in which undergraduates conduct year-long independent research projects involving one or several of five major pieces

APS IS LOOKING INTO PROBLEMS WITH US VISAS

The APS subcommittee on international scientific affairs and committee on the international freedom of scientists would like to hear about any difficulties experienced by foreign colleagues when applying for US visas to accept temporary assignments or to attend conferences. Reports should include the visa applicant's country of origin, subfield and proposed destination and activity in the US, plus any rationale that was offered for the difficulty and by whom. They should be mailed to SISA/CIFS, APS, 335 East 45 Street, New York NY 10017. ■