Nanoscale carbon materials research wins the 2008 Julius Springer Prize for Applied Physics

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Dr. Phaedon Avouris of IBM and Professor Tony Heinz of Columbia University were presented with the 2008 Julius Springer Prize for Applied Physics on 27 September 2008 during a day-long forum at Harvard University, attended by luminaries of the field. The Julius Springer Prize for Applied Physics recognizes researchers who have made an outstanding and innovative contribution to the field of applied physics. The forum was sponsored by the scientific publisher Springer.

Avouris and Heinz were honored for their pioneering work on the electrical and optical properties of nanoscale carbon materials. Carbon nanotubes, first reported in 1991, and graphene, which was even more recently discovered in 2004, have attracted a vibrant community of researchers intent on characterizing these new materials.

Carbon nanotubes and graphene show promise for a number of applications. One of the most exciting possibilities is that these materials could integrate electronics and optics, which could allow light to replace electricity in computers. This would allow faster calculations (since light moves far faster than electrons) and would eradicate some of today's problems with electronics, including chip-to-chip bottlenecks.

Heinz said, "This new set of materials is completely different from the materials that form the basis for today's computers and communications technologies. This is a very exciting time to explore the fundamental

properties of these materials." His co-winner agreed: "We are looking at electronics after silicon," said Avouris. "Wouldn't it be nice to unify electronics and optics with a single material?"

Heinz continued, "It is extremely important that ideas in one subfield enhance other fields. That's encouraged by having a broad set of talks, like we had here today at the forum."

Other potential applications include photovoltaics, sensors and light emitters, and uses in medicine. The current, work, however, is science research. Specific applications are difficult to foresee at this stage.

Avouris added, "The main motivator for research is always curiosity."

Phaedon Avouris is an IBM Fellow and manager of Nanoscience and Nanotechnology at IBM's Research Division at the Watson Research Center in Yorktown Heights, NY.

Tony Heinz is the David M. Rickey Professor in the Departments of Physics and Electrical Engineering at Columbia University. Previously, he also worked at IBM's Research Division at the Watson Research Center.

The Springer Forum

For the past 10 years, the Julius Springer Prize for Applied Physics has been awarded by the editors-in-chief of the Springer journals Applied Physics A-Materials Science & Processing (Dr. Michael Stuke, MPI Goettingen) and Applied Physics B-Lasers and Optics (Dr. Frank Traeger, University of Kassel). The winners receive the prize and checks totaling $5000.

This year the prize was awarded during the first Julius Springer Forum

on Applied Physics at Harvard University, at which leading scientists in the field of applied physics were brought together for a day of talks and poster presentations. The Springer Forum was organized by the editors-in-chief of Applied Physics A and Applied Physics B.

In addition to the prize winners of the Julius Springer Prize for Applied Physics, speakers included Nobel Laureate Wolfgang Ketterle of MIT and Stefan Hell of the Max Planck Institute for Biophysical Chemistry. The invited presentations at the Springer Forum, by distinguished researchers from both industry and academia in fields ranging from atomic physics, condensed matter physics and nanotechnology to chemistry and biotechnology, allowed ideas to cross-percolate.

Source: Springer