

UC SANTA BARBARA

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Scientists at U.S. Universities Win Nobel Prizes

STOCKHOLM, Sweden - Five scientists at universities in the United States won the Nobel Prizes in physics and chemistry Tuesday for work exploring the inner structure of matter. Their research has far-reaching implications, from a new generation of microelectronics to understanding the destruction of Earth's ozone layer.

Three physicists will share the prize for discovering how electrons can change behavior,

work that could lead to further advances in microelectronics.

And two researchers were named co-winners of the chemistry prize for theoretical research into the quantum properties of molecules.

In each case, the winners will share the \$978,000 prizes.

The chemistry award went to Walter Kohn of the University of California-Santa Barbara and John Pople of Northwestern University. Kohn, 75, was born in Vienna, Austria. He has taught at U.S. institutions since 1950, and at Santa Barbara since 1979.

Kohn was cited for development of density-functional theory in the 1960s. It simplifies the mathematical description of the bonding between atoms that make up molecules.

His approach makes calculations according to an average number of electrons located in any point, rather than trying to establish the motion of each electron in every atom in a molecule. This reliable model has enabled scientists to study large molecules that previously were too complex and unwieldy to understand.

Pople, 72, is a British citizen. He joined the faculty at Canegie-Mellon University in 1964 before relocating to Northwestern in 1986.

Pople was cited for developing computer techniques to test the chemical structure and details of matter. The resulting computer program is used by thousands of universities and companies worldwide. In the 1990s, he has refined the program to include Kohn's density-functional theory.

His approach allows scientists to create computer models of chemical reactions that are difficult or impossible to recreate in the laboratory. It has a wide range of applications, from studying interstellar matter based on telescope measurements of its chemical signatures and how pollutants such as freon react with the ozone layer.

In medicine, researchers use Pople's quantum chemistry methods to simulate the effects of proposed drugs to fight HIV infection.

The laureates in physics are Robert B. Laughlin of the United States, Horst L. Stoermer of Germany and Daniel C. Tsui, a native of China who is now an American citizen.

All the prizes are announced in Stockholm, except for the peace prize which is given in Oslo, Norway. The prizes are presented on Dec. 10, the anniversary of the death of Alfred Nobel, the Swedish industrialist and inventor of dynamite who established the prizes in his will.

By The Associated Press

About UC Santa Barbara

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draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.