

CHEMISTRY NOBEL TO TRIO FOR WORK ON BATTERIES

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Three scientists won the Nobel Prize in Chemistry on Wednesday for their work developing lithium-ion batteries, which have reshaped energy storage and transformed cars, mobile phones and many other devices and reduced the world's reliance on fossil fuels.

The prize went to John B. Goodenough, 97, a German-born engineering professor at the University of Texas; M. Stanley Whittingham, 77, a British-American chemistry professor at the State University of New York; and Japan's Akira Yoshino, 71, of Meijo University.

Oldest to win Nobel

At 97, Mr. Goodenough is the oldest Nobel winner.

The three each had a set of breakthroughs that laid the foundation for the development of a commercial rechargeable battery. Lithium-ion batteries, the first truly portable and rechargeable batteries, took more than a decade to develop.

The work had its roots in the oil crisis in the 1970s, when Mr. Whittingham was working on efforts to develop fossil fuel-free energy technologies. He harnessed the enormous tendency of lithium, the lightest metal, to give away its electrons to make a battery capable of generating over two volts.

By 1980, Mr. Goodenough had doubled the capacity of the battery to four volts by using cobalt oxide in the cathode one of two electrodes, along with the anode, that make up the ends of a battery.

But that battery remained too explosive for commercial use and needed to be tamed. That's where Mr. Yoshino's work in the 1980s came in. He substituted petroleum coke, a carbon material, in the battery's anode. This step paved the way for the first lightweight, safe, durable and rechargeable commercial batteries to be built and enter the market in 1991.

"We have gained access to a technical revolution," said Sara Snogerup Linse of the Nobel committee. "The laureates developed lightweight batteries with potential to be useful in many applications — truly portable electronics: mobile phones, pacemakers, but also electric cars."

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