



Compatriots Ei-ichi Negishi (left) and Akira Suzuki of Japan display their medals for the 2010 Nobel Prize in Chemistry at the Concert Hall in Stockholm, December 10, 2010.

# Pioneers in Organic Synthesis

The Nobel Prize in Chemistry 2010 was awarded to Distinguished Professor Ei-ichi Negishi of Purdue University (USA), Hokkaido University Distinguished Professor Emeritus Akira Suzuki, and University of Delaware (USA) Professor Emeritus Richard Heck.

The Prize was awarded for palladium-catalyzed cross couplings in organic synthesis.

Cross-coupling is a chemical reaction that uses a catalyst to bind together two distinct organic compounds (compounds that include carbon), creating a different organic compound. In the past, organic compounds such as plastic or synthetic fiber have been artificially produced using chemical reactions. However, binding does not occur simply by mixing organic compounds. The reason for this is that the carbon atoms that make up organic compounds possess properties that do not easily fuse with other

carbon atoms.

As chemists all around the world researched methods of binding together different organic compounds more easily and efficiently, in 1972, Professor Heck succeeded with a synthesis method using a metal called palladium as a catalyst. In 1977, Professor Negishi used organic zinc in addition to palladium to synthesize organic compounds more efficiently, and in 1979, Professor Suzuki developed the synthesis method of adding boric acid to palladium, which is safer and easier to handle than organic zinc. The development of this synthesis method enabled high-function organic compounds to be produced by binding together for the intended purpose organic compounds with complex structures. Today, cross-coupling is being used in the manufacture of products in a variety of fields. Examples include the material for liquid crystal used for personal computer



Akira Suzuki (left) receives the joint 2010 Nobel Prize in Chemistry from Swedish King Carl XVI Gustaf at the Concert Hall in Stockholm, December 10, 2010.

or TV screens, antibacterial agents, pesticides, and drugs to lower blood pressure used by 22 million people throughout the world.

The Award Ceremony was held on December 10, 2010 in Stockholm, Sweden. At the banquet following the Award Ceremony, Professor Negishi delivered a speech on behalf of the three recipients of the chemistry prize. In his speech, Professor Negishi said, "Receiving a Nobel Prize is the ultimate recognition for a lifetime spent questioning, exploring, experimenting; passing through the valleys of anguish to climb the mountains of success." He also said, "Our work in palladium-catalyzed cross-couplings in organic synthesis has been ongoing for many years and it will continue. But the full impact of it is not yet realized. Others will use what we have learned, build on what we have discovered and use this to help people and technology in ways that we can only imagine today."

This year's awards bring the total number of Japanese Nobel laureates, including one recipient based in the United States, to eighteen.

Ei-ichi Negishi escorts Sweden's Crown Princess Victoria to the Nobel banquet at the Stockholm City Hall, December 10, 2010.