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Hideki Shirakawa: Synthesized Counductive Polymers

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Hideki Shirakawa synthesized conductive polymers

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BIOGRAPHY
- Born August 20, 1936 in Tokyo, Japan
- Knew what he was going to do
- 1976 worked with Alan G. MacDiarmid and Alan J. Heeger
- Major: Polymer chemistry, chemical engineering
- Married with 2 children
- Retired and living in NY

POLYACETYLENE THIN FILM
- Polyacetylene
  - Normally black powder
  - Insoluble and infusible
  - Hard to work with
  - Ziegler–Natta catalyst
    - Ti(OCH3)4 + Al(C2H5)3
    - Used unique kind
    - Accidentally added 1000 times more

POLYACETYLENE
- trans-polyacetylene → metallic behavior
- cis-polyacetylene

CONDUCTIVE POLYMERS
- Doping
- π bonds in polyacetylene
- Oxidation to form carbocations
- Product: trans-polyacetylene
- Conductivity way higher
- United the light and flexible plastic with electric properties of metals

WHAT IS CHEMICAL DOPING?
- When you add small amounts of impurities (e.g., iodine)
- Can be used to make plastics behave more like metals
- Free-floating electrons = current of electricity
- Oxidation

AWARDS AND ACCOMPLISHMENTS
- Degree of Doctor of Engineering in March 1966
- 1983 - The Award of the Society of Polymer Science, Japan
- 2000 - Nobel Prize in Chemistry
- Order of Culture and selected as Person of Cultural Merit
- Special Award of the Chemical Society in Japan

REFERENCES