

New Molecule Heralds Breakthrough in Electronic Plastics

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Developed by TDA Research in Wheat Ridge, Colo., Oligotron polymers are made of tiny bits of material that possess a conducting center and two, non-conducting end pieces. The end pieces allow the plastic bits to dissolve in solvents and accommodate specialized molecules.

For decades, researchers have been trying to craft electronics that use plastics instead of metal to transmit currents. In addition to the potential savings in weight and cost, conducting polymers could be manufactured in a variety of convenient shapes, yielding such innovations as fabrics that transmit data and incredibly thin video displays.

Oligotron, developed with National Science Foundation (NSF) Small Business Innovation Research (SBIR) support, contains a PEDOT center, but it is soluble in non-corrosive chemicals and can attach new compounds to its end pieces, adding a variety of functions. For example, researchers have proposed end pieces that convert solar energy into electricity, ultimately creating a novel solar cell material.

Oligotron also has special properties that allow the material to be "printed" into various device shapes. When technicians shine a pattern of ultraviolet light, such as a complex circuit image, onto a film of dissolved Oligotron, the exposed areas of plastic become "fixed" like a photograph. Flexible and lightweight, the circuit is also fully functional. TDA researchers predict applications for the product that range from flexible television displays and smart cards to antistatic treatments and conducting fabrics.

Oligotron is a trademark of TDA Research, Inc.

Full story at: www.nsf.gov/

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