along with the demonstration of good performance of the devices, opens the way to further exploration of these methods for organic laser production.

AMANDA GIERMANN

Poly(3,3″-dialkyl-terthiophene) OTFTs Stable under Ambient Atmospheric Conditions

Organic thin-film transistors (OTFTs) have the advantages of low-cost solution fabrication and excellent flexibility, which enable their application in devices such as flexible displays and electronic paper. However, most solution-processed organic semiconductor materials used in OTFTs either have poor structural order from solution or their performance is degraded by atmospheric oxygen doping. Recently, a group of scientists from Xerox Research Center of Canada demonstrated that poly(3,3′-dialkyl-terthiophene)s have sufficient air stability to enable solution fabrication of functionally useful OTFTs under ambient conditions.

As reported in the January 25 issue of *Chemistry of Materials* (p. 221; DOI: 10.1021/cm048678r), B.S. Ong and coworkers synthesized poly(3,3′′-di-*n*-octylterthiophene) by a controlled $FeCl_3$-mediated polymerization in chlorobenzene. While most solution-processed semiconductors used in OTFTs need high-temperature *in situ* reactions or postdeposition thermal annealing, the material the research team designed, poly(3,3′′-di-*n*-octylterthiophene), could be processed at room temperature and showed higher field-effect transistor (FET) mobility without thermal treatment. Through the study of poly(3,3′′-di-*n*-octylterthiophene), the researchers demonstrated the profound influence of side-chain regiochemistry on molecular ordering behavior and the subsequent impact on field-effect characteristics.

Using poly(3,3′′-di-*n*-octylterthiophene) as the channel material, the researchers then fabricated and characterized their OTFT devices at room temperature and in open air. These 20–50-nm-thick devices (90 μm or 190 μm channel length, channel width of 1 mm or 5 mm), fabricated on a 100-nm-thick thermal oxide on an *n*-doped silicon wafer, showed near-ideal FET behavior and greater ambient stability compared with other organic semiconductors. The researchers said that the excellent self-organization ability in thin films from solution at room temperature without thermal assistance and its stability in air may render poly(3,3′′-dialkyl-terthiophene) an ideal channel semiconductor for low-cost OTFTs. This technology could ultimately lead to inexpensive large-area devices like flat-panel and flexible displays and low-end microelectronics such as rf identification tags.

TAO XU

Low-Density Sublimed *p-tert*-butylcalix[4]arene Demonstrates Ability for Methane Storage at Room Temperature

Calixarenes are complex organic compounds formed by phenolic molecules arranged in open structures capable of encapsulating different ions or molecules. One form of these compounds is calix[4]arene, which can stably entrap vapor or gas molecules, releasing them only after heat decomposes its structure. As *p-tert*-butylcalix[4]arene, it can selectively adsorb CO_2 from a mixture with H_2.

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