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Colloquium on Advanced Materials

Performance Metrics for Organic Field-Effect Transistors

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Organic field-effect transistors (OFETs) provide an opportunity to incorporate electronics in non-traditional areas such as clothing, electronic paper, flexible and rollable applications, bio-integrated applications, and more. With favorable properties such as a low manufacturing cost and compatibility with arbitrary substrates like paper, plastic, or fabric, these devices have the potential to augment silicon technologies by advancing a wide range of industries where traditional electronics are not applicable or are too expensive. For such a sweeping revolution to occur, however, the electrical performance of OFETs must reach the necessary standards. A common figure of merit used for the characterization of OFETs is the charge carrier mobility, μ . The mobility of several organic semiconductors reached values on par with that obtained in silicon transistors. In this presentation I will address the various methods for mobility calculations, the inaccuracies that may arise from non-ideal device characteristics, and methods to overcome these experimental errors. While achieving a high mobility is necessary for integrating organic transistors into various opto-electronic applications, this is not sufficient. In the second part of my talk I will address other device properties of relevance to OFET operation, such as the on/off ratio, the threshold voltage, subthreshold swing, and operating voltage.

Date:
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Time:
17:00 (s.t.)

Place:
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