

Blends of organic semiconductors for high performing electrolyte-gated field-effect transistors

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Organic-based devices are attracting great attention for applications requiring low-cost and flexibility. Engineering processing techniques that could give rise to highly crystalline and homogenous semiconducting films resulting in reproducibly high mobility and reliable devices is a current challenge. We report here the bar-assisted meniscus shearing of organic semiconductor blends based on small semiconducting molecules and an insulating polymer. This technique results in highly crystalline thin films that show ideal OFET characteristics. Such organic semiconducting thin films have also been successfully applied in water electrolyte gated OFETs exhibiting a very high performance and stability. In addition, these devices have shown great potential for the development of ion sensors and bio-sensors.