

## **Work-function engineering of graphene electrodes by self-assembled monolayers for high-performance organic field-effect transistors**

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We have devised a method to optimize the performance of organic field-effect transistors (OFET) by controlling the work functions of graphene electrodes by functionalizing the surface of SiO<sub>2</sub> substrates with self-assembled monolayers (SAMs). The electron-donating NH<sub>2</sub>-terminated SAMs induce strong n-doping in graphene, while the CH<sub>3</sub>-terminated SAMs neutralize the p-doping induced by SiO<sub>2</sub> substrates, resulting in considerable changes in the work functions of graphene electrodes. This approach was successfully utilized to optimize electrical properties of graphene field-effect transistors and organic electronic devices using graphene electrodes. Considering the patternability and robustness of SAMs, this method would find numerous applications in graphene-based organic electronics and optoelectronic devices such as organic light emitting diodes and organic photovoltaic devices.