

Light-induced electrical switching of porphyrin-covered silicon nanowire FETs (Presentation Video)

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ABSTRACT

Nanowires represent excellent building blocks for future nanoelectronics, due to their efficient charge transport characteristics. Here we present light-induced switching behaviour of porphyrin-coated silicon nanowire field effect transistors (Si NW FETs) and demonstrate their capabilities for design of hybrid nanodevices – consisting of organic complexes and inorganic nanowires. Switching of Si NW FETs highly reflects the electrical change of porphyrin molecules by light. To demonstrate significant factors of concentration-dependent switching of porphyrin-covered devices, electrical charging mechanism through molecules and nanowires has been understood, that allows the systematic integration of the hybrid devices.

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