Electrodeposition of Nanoengineered Materials and Devices 3

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based microscale devices. Tuning and switching possibilities (doping/electric field/electrowetting) are possible. Some systems produce higher temperatures. Nanoporous Si (PSi) vs. Nano-Si. Surface properties can be manipulated. Self-assembled monolayers are applied to the surface of. Practical device implementations also require materials with high thermal and chemical stability and uncompromising EO performance. We have used a theory-aided design process applying classical and quantum mechanical techniques to design a new generation of OEO materials intended to meet the needs of hybrid devices. Carrier transport and device operation have been explained with the help of energy band diagrams extracted at different operating voltages. The optimised double-well structure yields an unprecedented ION/IOFF=10^15, simultaneously achieving a sub-threshold swing=74mV/decade, thereby indicating high switching speed. The thin film obtained by electrodeposition of PANI-X1 on P3HT/PCBM blend was prepared in perchloric acid solution.