

Cost effective and mass-producible platform to fabricate chemical and biological nanowire sensors

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Up to date, the semiconductor nanowire devices for chemical and biological sensors have attracted numerous interests in various fields. However, it is recognized that their fabrication routes considering cost and mass production still remains a great challenge. As an effort to address this issue, we developed a cost effective top-down approach consorted with nanoimprinting and plasma etch technologies. Furthermore, this approach also makes it easy to fabricate various surface morphologies on nanowire, leading to high performance chemical and biological nanowire sensor. Especially, we simulated and explained the detailed effects of surface morphologies in chemical and biological nanowire sensors. Finally, we demonstrated that nanowire sensors based on this approach can detect chemical and biological moieties, which can be comparable with the conventional bottom-up based nanowire sensors.