

Biomedical Device Technologies for Point of Care Applications; design, fabrication, characterization and commercialization

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The presenter would like to introduce two kinds of stories. First, this presenter will give a brief stories for nano-devices based on metal membrane of reduced graphene, for separation of biological materials like proteins. Second, this will show how to design, fabricate, characterize and commercialized the biomedical device technologies using the MEMS or NEMS through talking with several case reports. I will present five small stories concerning the commercialization or technologies transfer cases of your research subject from design to commercialization. Thus First, I will give basic biomedical device technologies for sample preparation for blood analysis testing. Second, a simple and smart telemedicine device for resource-poor counties, was designed with very simple 3-colored LEDs, PDs and optical signal divider. The device is evaluated experimentally using about 1000 human urine samples, by comparing to the clinical equipment. The portable ubiquitous biochip reader technology and its application will be presented to the digital ovulation or pregnancy testing. Third, the real-time micro PCR (polymer chain reaction) platform technologies, using a flexible film heating module were implemented for battery-powered point-of-casting. Fourth, the micro heating platform technology using 6-inch wafer-level semiconductor process will be present for micro gas sensors in array. Lastly, the circulating cancer cell separating technologies will be presented for early cancer diagnostics of companion diagnostics. Through some technical and business procedures, they were commercialized and showing up in the market through companies. We believe that the MEMS-based revolutionary methods can contribute to accelerate the acceptance of mobile healthcare as a practical tool in point of care.