

**Canon US Life Sciences:** SBM was engaged to design and prototype a multi-element microfluidic cartridge for High Resolution Thermal Melt (HRM) analysis. HRM is a powerful molecular diagnostic technology for detecting mutations in patient DNA samples. The HRM cartridge consists of a photolithographically-defined multi-channel fluidic chip, containing integrated platinum resistance thermal detectors (RTD's) and heaters. The chip was required to be PCR (polymerase chain reaction) compatible and to show low background fluorescence. In addition, manufacturing methods were required to be consistent with high throughput, batch wafer processing. SBM performed and delivered all aspects of process development, design and fabrication of prototype devices. During this development process, a method for integrating the heaters onto the backside of the fluidic device was invented by SBM. This invention was disclosed and assigned to CULS, and is currently being pursued with additional R&D funding as a possible method for chip manufacturing. In addition to the primary fluidic chip, a second set of plastic (PMMA) interface chips were designed and fabricated. These chips utilized a wafer-level hot embossing process that was developed for CULS by SBM, along with a proprietary ultrasonic bonding process for sealing the devices. SBM is proud of the role it is playing in the development of CULS' system for cost-effective, portable and scalable real time nucleic acid analysis.

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Figure 1: Microfluidic chip with integrated sensing and heater resistors and multiple channels for PCR and thermal melt analysis.

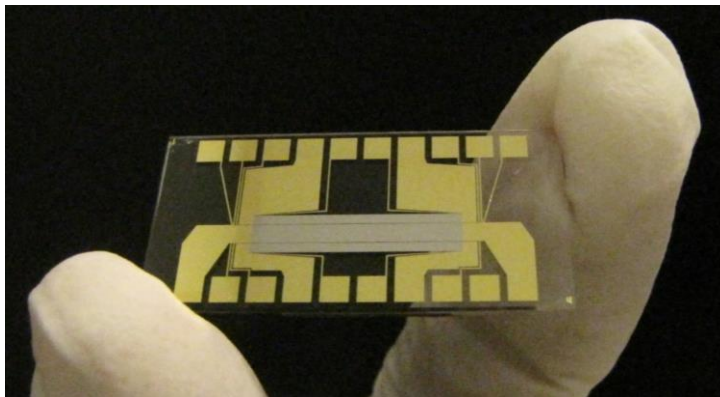


Figure 2: SBMicro manufactured heater chip of microfluidic chip package