Invention Available for Licensing  Nanomaterials

Title:  Melt-and-Mold Fabrication of Reconfigurable Devices

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Applications:
- Manufacturing method for reconfigurable nano-, microdevices
- Enables manufacture of devices for use in limited resource settings such as developing nations or in response to natural disasters like hurricanes
- Applicable to diagnostics, microfluidic devices, and bio-environmental assays

Benefits:
- Low-cost, easy to use method to fabricate nano- and microdevices
- Versatile method to create devices of many kinds from a single material

Technology Description:
A major challenge in healthcare, and in food and clean water supply, is the lack of locally-available tools to diagnose diseases, measure soil nutrient content, detect food toxins, or assess the quality of water. In particular, there is a need for low-cost, easy-to-use technologies for use in developing nations or resource-limited settings. New approaches to diagnostics and analytical measurement might be able to take advantage of the growing global connectivity so that device fabrication capability is feasible at point-of-use. This invention provides a method to manufacture devices that can be used for various humanitarian, military, and industrial applications. The invention takes advantage of the low-melting-point of certain materials, such as Field's metal or a related alloy, which can be molded into a device which can then be reconfigured to fabricate another device. The resulting device may be a diagnostic device, a microfluidic device, an optical grating, or a well plate comprised of a low melting point material. A diagnostic kit in accordance with the invention may further comprise a source of a reconfigurable material, such as a mold, that may be made of plastic, rubber, metal, paper, wax, wood, stone, or glass.

Patent and Publication Status:
UMass Boston has filed a U.S. patent application on this invention. The research underlying the invention has been published at Talanta 145 (2015) 20–28.

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A microfluidic device prepared in accordance with the invention.