

(5-23-2011)

A Self-Heating Cartridge for Molecular Diagnostics Supplemental Information

Changchun Liu, Michael G. Mauk, Robert Hart, Xianbo Qiu and Haim H. Bau*

Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania,
PA 19104-6315

*** Corresponding author**

Professor Haim H. Bau

Department of Mechanical Engineering and Applied Mechanics

University of Pennsylvania

229 Towne Building

220 South 33rd St.

Philadelphia, Pennsylvania 19104-6315, USA

Fax: (215) 573-6334, Phone: (215) 898-8363

E-mail: bau@seas.upenn.edu

1. Self-Heating Mg-Fe Alloy

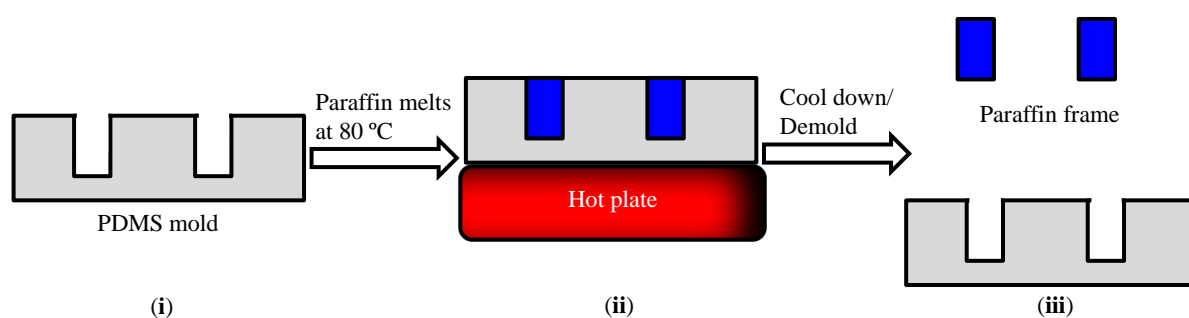


Fig. S1: A photograph of Mg-Fe alloy used in the exothermic reactor

2. Home-Made Paraffin Frame



(A)



(B)

Fig. S2: Custom-made paraffin frame for thermal regulation of the exothermic reaction. (A) A photograph of custom-made, paraffin frame. (B) A schematic depiction of paraffin frame fabrication process. (i) PDMS mold. (ii) PDMS mold filled with molten paraffin. (iii) The paraffin frame removed from the mold after cooling to room temperature.

3. Experimental Set-Up to Control Ambient Temperature



Fig. S3: To simulate various ambient temperatures, experiments were carried out in an oven (Isotemp Vacuum Oven Model 280A, Fisher Scientific Inc., Pittsburgh, PA)

4. Mini keychain UV light for visual fluorescent detection



Fig. S4: A photograph of the reusable, mini keychain UV light source for fluorescent excitation (PickEgg Ltd, Hong Kong, \$2)