MICROFLUIDIC DEVICES WITH REMOVABLE COVER AND METHODS OF FABRICATION AND APPLICATION

ABSTRACT OF THE DISCLOSURE

The present invention includes microfluidic systems having a microfabricated cavity that may be covered with a removable cover, where the removable cover allows at least part of the opening of the microfabricated cavity to be exposed or directly accessed by an operator. The microfluidic systems comprise chambers, flow and control channels formed in elastomeric layers that may comprise PDMS. The removable cover comprises a thermoplastic base film bonded to an elastomer layer by an adhesive layer. When the removable cover is peeled off, the chamber is at least partially open to allow sample extraction from the chamber. The chamber may have macromolecular crystals formed inside or resulting contents from a PCR reaction. The invention also includes a method for making vias in elastomeric layers by using the removable cover. The invention further includes methods and devices for peeling the peelable cover or a removable component such as Integrated Heater Spreader.

Fig. 1B