

Supplemental Information

Sacrificial Microfiber Fabrication

The cotton candy machine was modified to allow the user to exert more control over the process parameters. The heaters and the motor were each connected to variacs in order to control the mandrel temperature and rotational speed. The channel diameter and channel density may be controlled by varying the melt-spinning apparatus mandrel speed and temperature and by varying the fiber collection technique and subsequent handling, respectively.¹ We did not vary the temperature of the mandrel from the default setting (as it seemed to work well), but we did supply only 90V to the mandrel motor (as opposed to the line voltage), causing it to spin slower and produce qualitatively larger, stiffer fibers. The fibers were collected manually according to the machine instructions.

Sugar Stick Fabrication

Sticks of sugar were formed by pouring molten sugar onto aluminum foil. First, store-bought granulated sugar was melted in a beaker using a hot plate at approximately 190° C. We took care to remove the sugar from the heat before it burned. The molten sugar was manually poured into thin lines on aluminum foil. The speed with which the molten sugar was dragged along the foil determined the sugar stick diameter. The molten sugar cooled quickly at room temperature, and could then be used as a sacrificial material to make macrochannels.

Assembly

The sugar sticks were embedded into the microfiber ball by hand. If the ambient humidity was not high enough to render the sugar sticks sticky, they were brought near running hot water to put them in a more humid environment. The sugar sticks were placed on the microfiber ball in the desired location, and the microfiber ball was then manually pressed into an appropriate size to fit in a Teflon mold.

1. N. Bursac, Y. H. Loo, K. Leong and L. Tung, *Biochem. Biophys. Res. Commun.*, 2007, 361, 847-853.