Using plastic Microcapillary Films (MCFs) for process intensification

Dr B. Hallmark and Prof. M.R. Mackley

bh206@cam.ac.uk

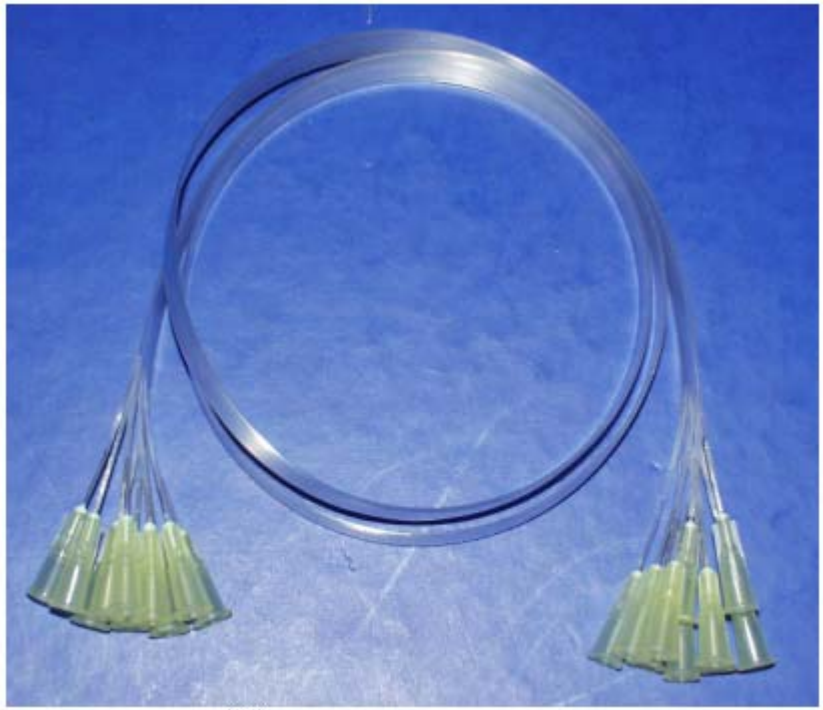
http://www.cheng.cam.ac.uk/research/groups/polymer/
http://www.microcapillaryfilms.org.uk/

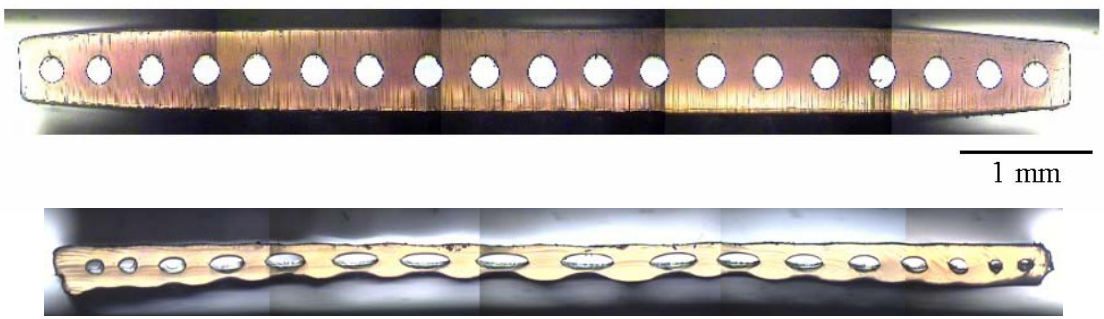
Department of Chemical Engineering
University of Cambridge
UK

UNIVERSITY OF CAMBRIDGE
Department of Chemical Engineering

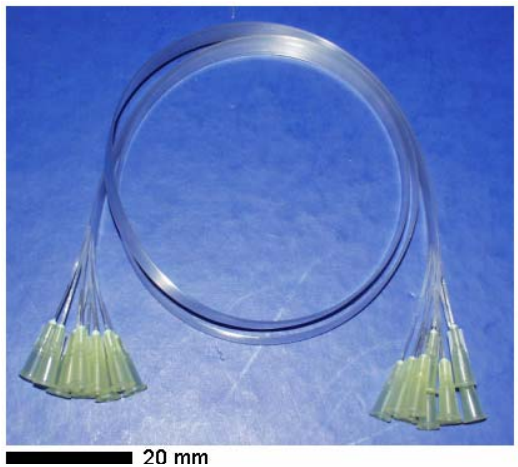
Polymer Fluids

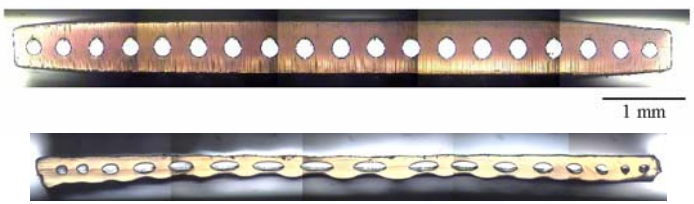
What are MCFs?





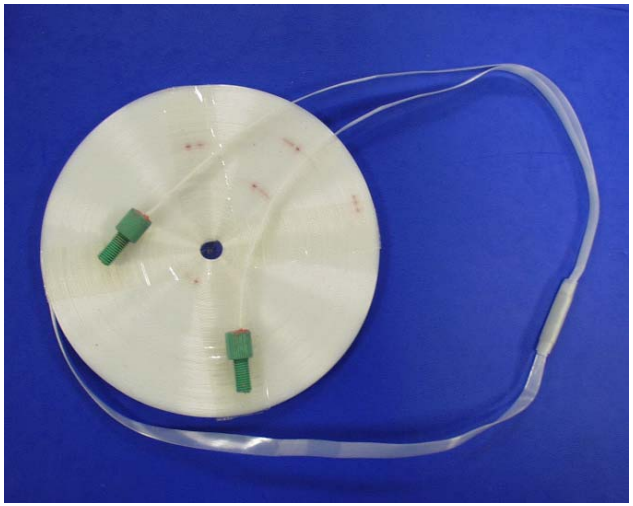
What are MCFs?



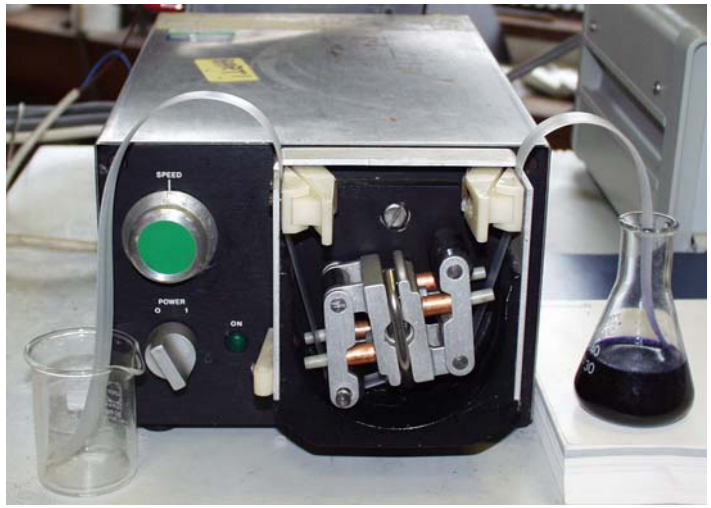


- Extrusion processed microfluidic pathway
- Capillary diameters from 30 micron to 800 micron
- Fabrication process robust to variety of polymers

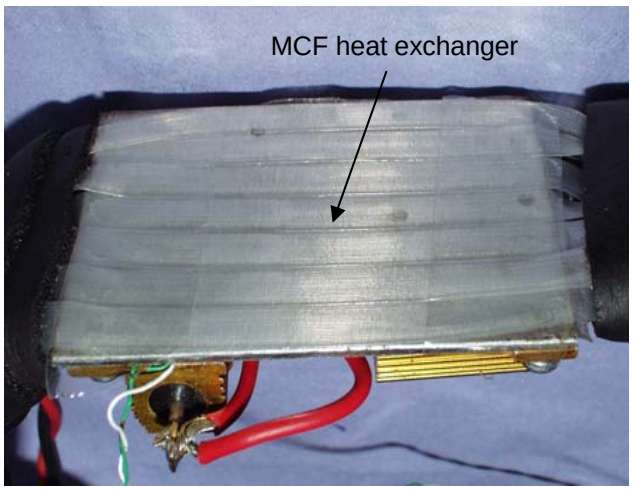
How could MCFs be used for process intensification?



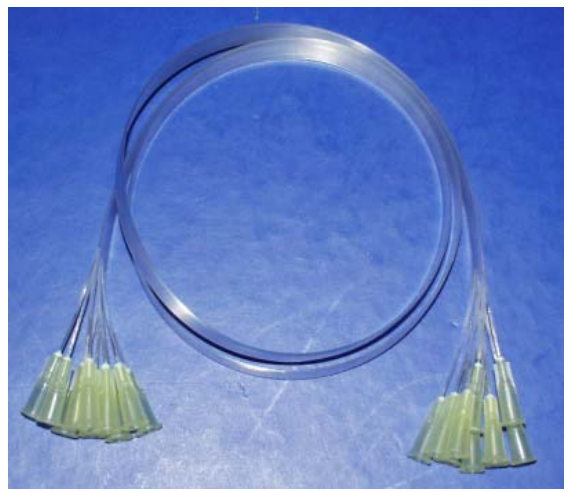
Chemical Microreactors



Pump systems



Micro heat exchange



Parallel fluid delivery systems

For more information…

1. Please come and talk to me!

2. Visit the MCF website – http://www.microcapillaryfilms.org.uk/

3. Selected publications:

- C.H. Hornung, B. Hallmark, R.P. Hesketh and M.R. Mackley, The fluid flow and heat transfer performance of thermoplastic Microcapillary films, J. Micromech. and Microeng., 16, 434-447, 2006.

- B. Hallmark, M.R. Mackley and F. Gadala-Maria, Hollow microcapillary arrays in thin plastic film, Adv. Eng. Mater., 7(6), 545-547, 2005.

- B. Hallmark, M.R. Mackley and F. Gadala-Maria, The melt processing of polymer microcapillary film (MCF), J. Non-Newton Fluid., 128, 83-98, 2005.