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Low Reynolds number hydrodynamics of microstructured optical fiber fabrication[1] PETER BUCHAK, DARREN CROWDY, Imperial College London, YVONNE STOKES, University of Adelaide — Microstructured optical fibers (MOF's) derive novel optical capabilities from having large numbers of wavelength-scale channels. MOF's are fabricated by the capillary drawing of a molten glass preform at low Reynolds number, during which the cross section deforms under surface tension, with the result that the configuration of the channels in the fiber may differ from the perform. This unintended deformation is inadequately understood and is difficult to investigate experimentally. In this talk, we describe methods we have developed to model slender viscous fibers with multiply connected cross section, which make possible theoretical investigation of the deformation, with the aim of determining the preform configuration required to produce a fiber with a desired arrangement of channels.

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Peter Buchak
Imperial College London

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