

Abstract Submitted  
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**Drop size selection in axially heated co-axial fiber capillary instability**<sup>1</sup> SAVIZ MOWLAVI, Department of Mechanical Engineering, Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, MA 02139, PIERRE-THOMAS BRUN, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA, FRANCOIS GALLAIRE, Laboratory of Fluid Mechanics and Instabilities, STI, EPFL, Lausanne, Switzerland — We analyze the sphere size selection mechanism in silicon-in-silica sphere formation through the application of an external axial thermal gradient to a co-axial silicon-in-silica fiber (Gumennik et al., Nature Com., 2013). We first apply a convective/absolute stability analysis to the in-fibre capillary instability governing the sphere formation and demonstrate that the resulting wavelength selection predicts a finite but still too large wavelength. A global stability analysis is then pursued, which accounts for the spatial inhomogeneity of the base flow.

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