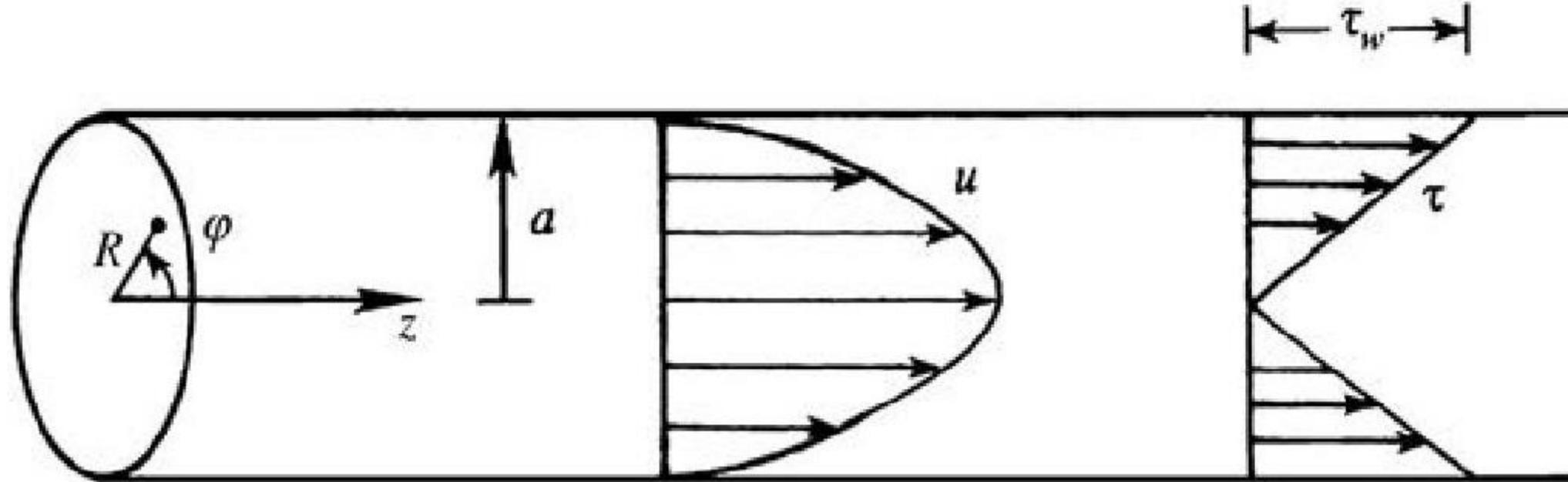




“Frictionless flow”

Arvind Arun Dev
University of Strasbourg
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Flow through a tube



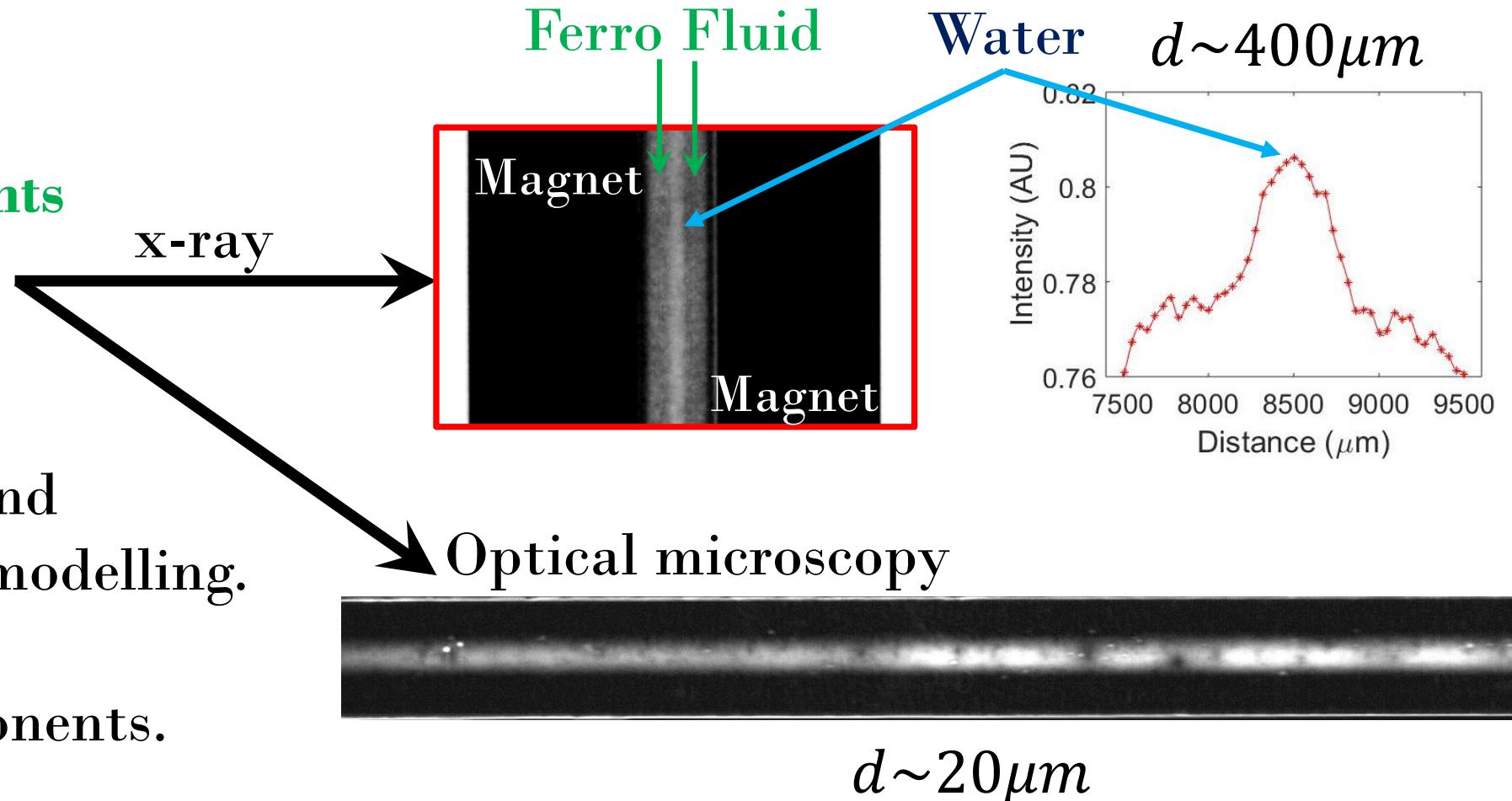
Fluid Mechanics, Sixth edition.
PIJUSH K. KUNDU, IRA M. COHEN DAVID R. DOWLING

- No slip boundary condition
- Parabolic velocity profile
- Wall shear stress

“Frictionless flow”

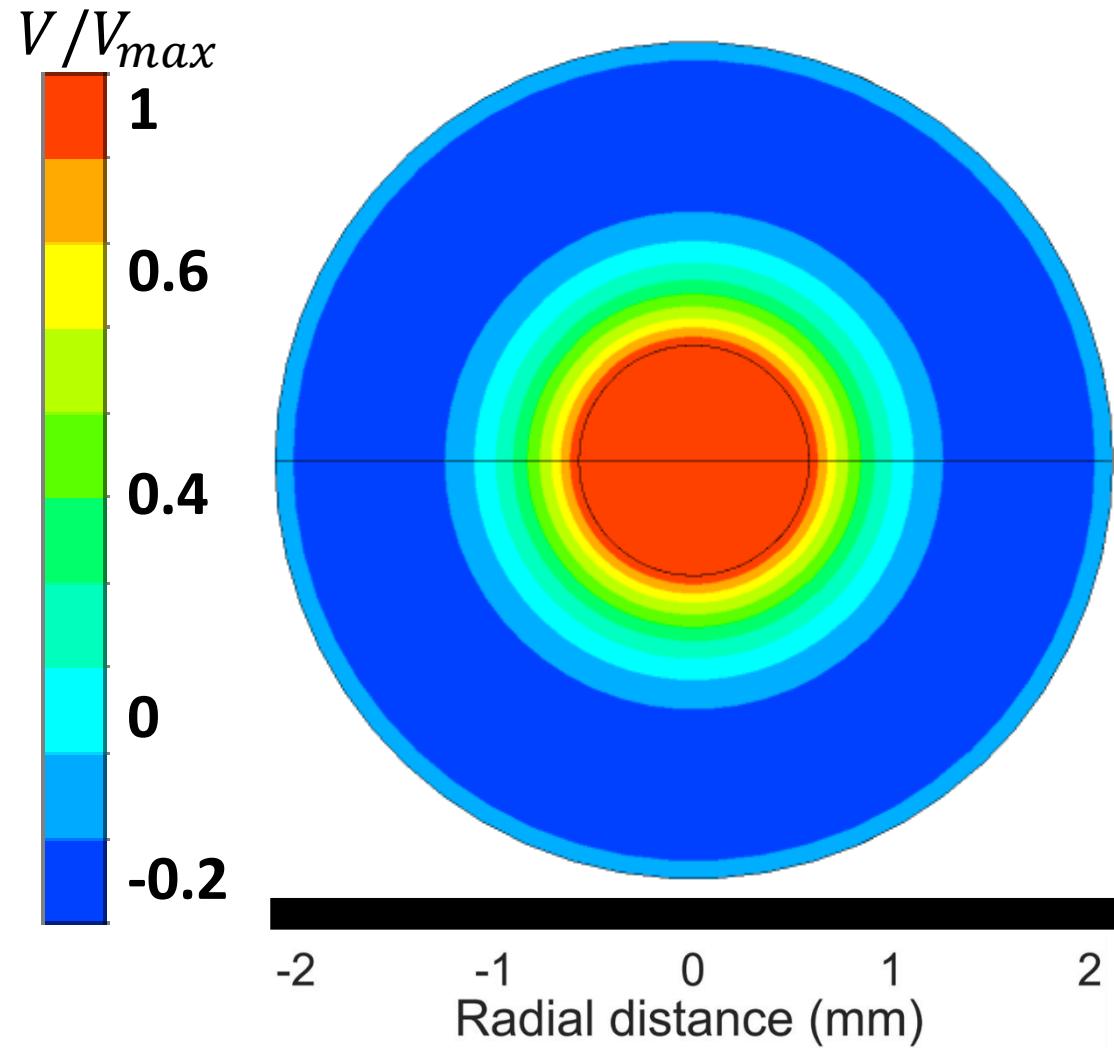
- Realization of small antitube system:

- Design
- Components
- Imaging

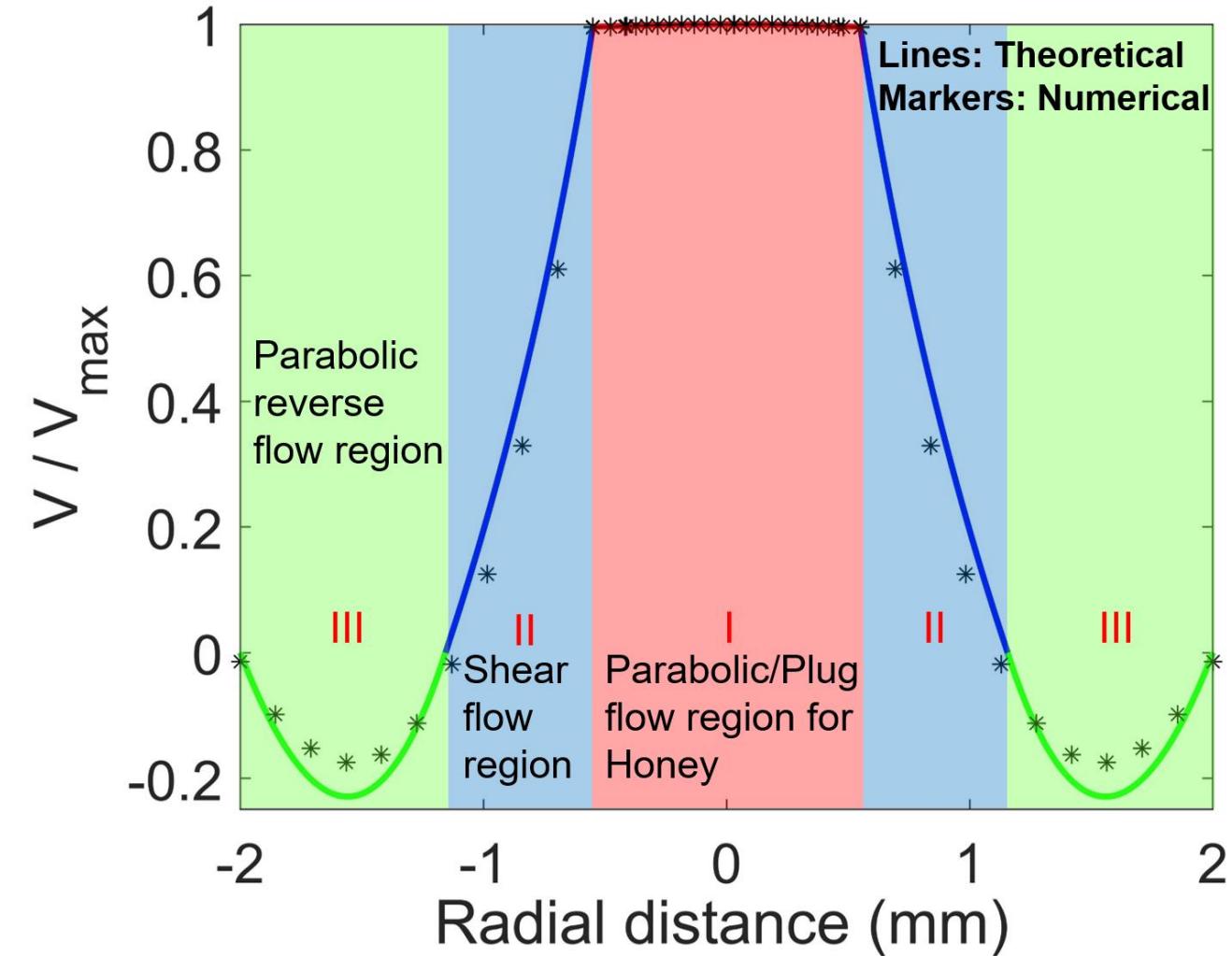


- Characterization and parametric study, modelling.
- Microfluidic components.

Frictionless flow systems

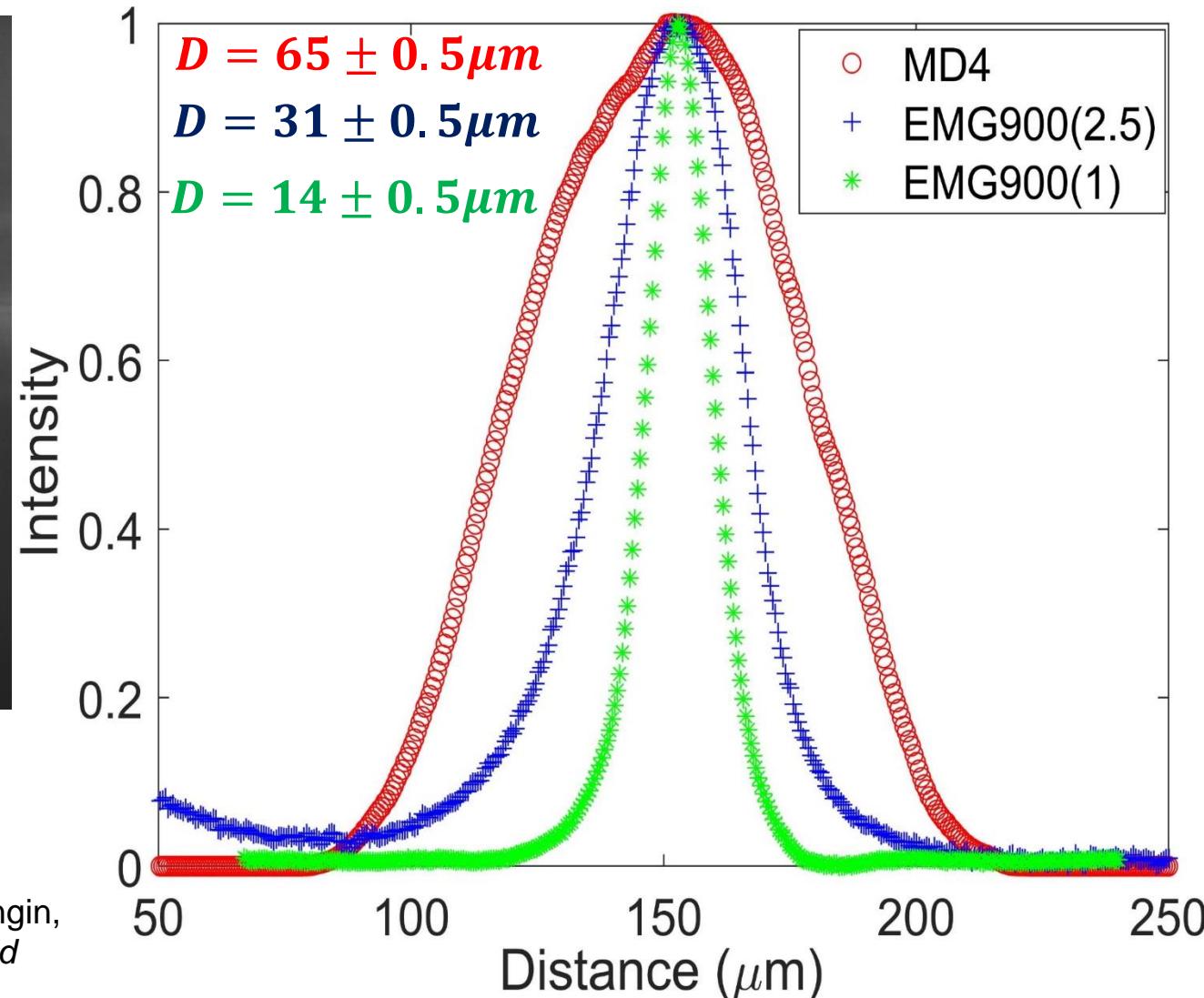
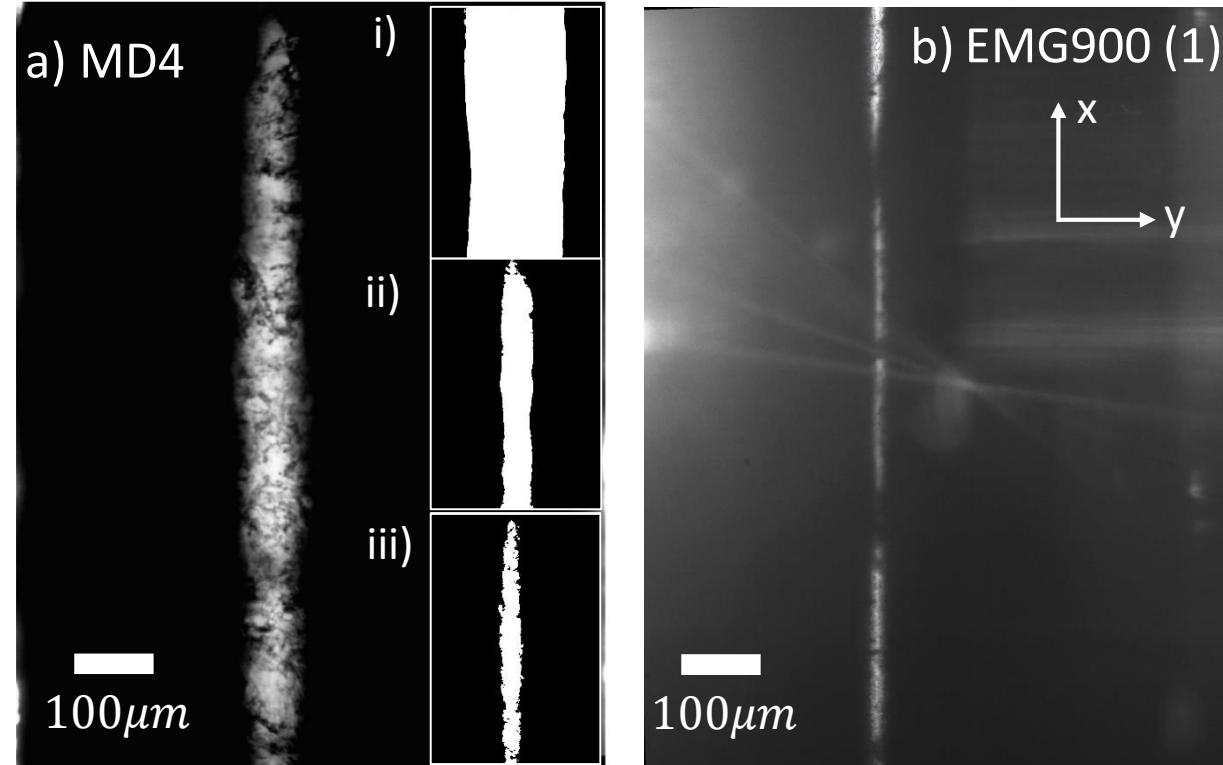


Numerical Simulation of flow of honey



Theoretical and Numerical velocity profile

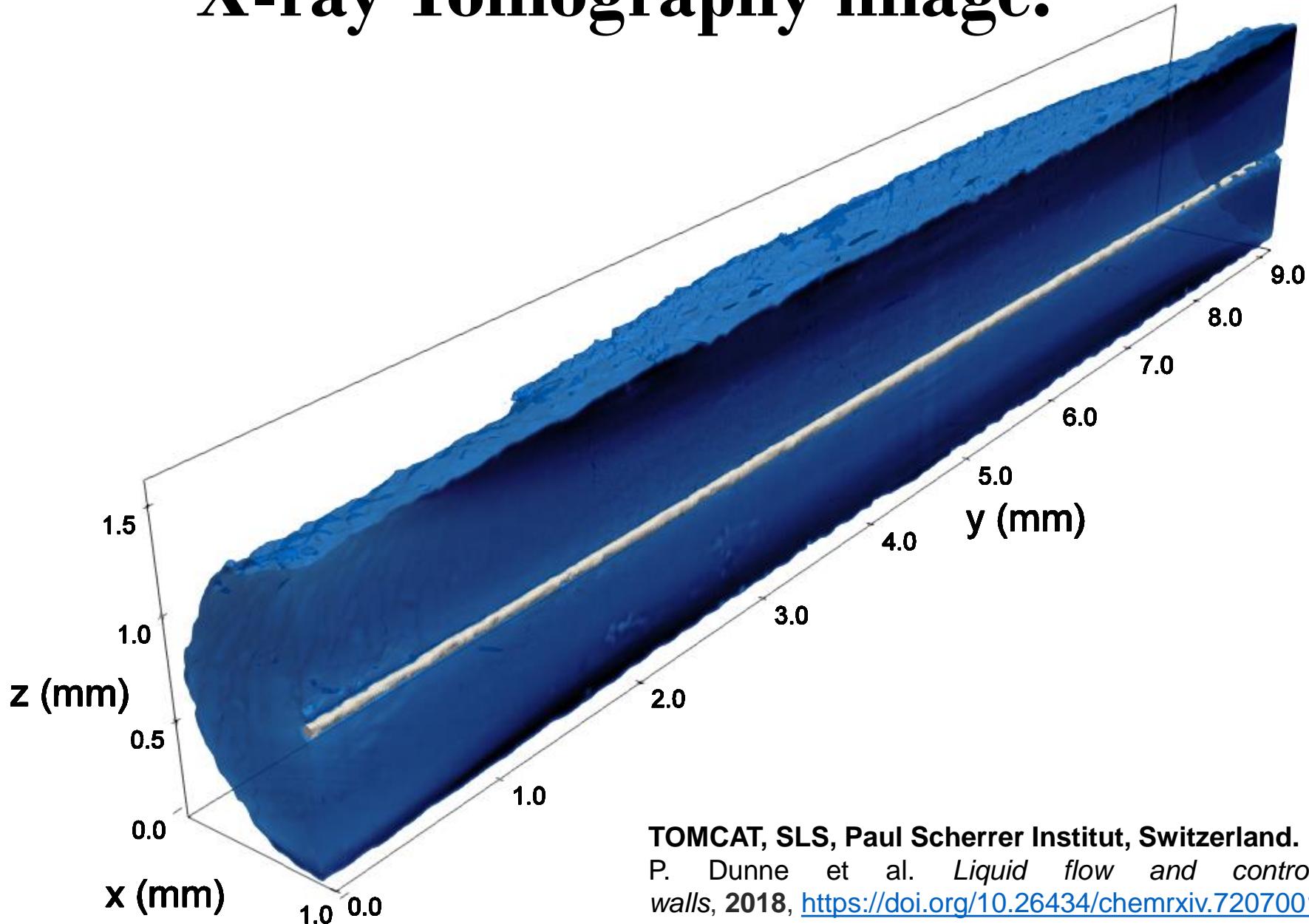
Sub 100 micron antitubes



Optical microscopy image of “antitube” in ferrofluid environment.

P. Dunne, T. Adachi, A.A. Dev, A. Sorrenti, A. Bonnin, C. Bourdon, P. Mangin, J.M.D. Coey, B. Doudin, T.M. Hermans, *Liquid flow and control without solid walls*, 2018, <https://doi.org/10.26434/chemrxiv.7207001.v1>

X-ray Tomography image.



TOMCAT, SLS, Paul Scherrer Institut, Switzerland.

P. Dunne et al. *Liquid flow and control without solid walls*, 2018, <https://doi.org/10.26434/chemrxiv.7207001.v1>