LadHyX Seminar -- March 27, 14 :00 – LadHyX library

Thomas Gervais, Polytechnique Montréal

3D culture, reagent delivery, and bioassay development using closed- and open-space microfluidics

In the past decade, microfluidics has grown to take new, freer, and more application-driven forms. These include capillary-driven, open-space microfluidics, and hanging drop microfluidic systems. Understanding fundamental fluid mechanics and transport phenomena in these microstructures gives rise to new functionalities for biopsy handling, spheroid synthesis, point-of-care analysis, or dynamical biological surface processing. In this talk, we will discuss how fluid mechanics and mass transfer modelling plays a key role in the design, optimization, and operation of several emerging microfluidic-based technologies. We will provide concrete examples of theory-guided technological developments from our laboratory in the field of tumor on-chip, open-space microfluidics, and capillary-driven microfluidics.

Thomas Gervais' Bio

Thomas Gervais is associate professor of engineering physics and biomedical engineering at Polytechnique Montréal. He is also associate researcher and co-founder of the microfluidics for oncology platform at the University of Montreal's hospital research center (CRCHUM). His research focuses on fundamental fluid mechanics and mass transfer in microstructures, with an emphasis on developing miniature systems for the interrogation of cancer tissues and the development of point-of-care portable assays. He holds a bachelor degree in engineering physics from Polytechnique Montreal and a Ph.D. in bioengineering from MIT. Beyond research and teaching, he is also a seasoned populariser of science, having written over 100 popular science articles, 35 short TV documentaries, and appeared in over 75 episodes of various French Canadian Science TV shows in the past decade.