

# PhD in Civil and Environmental Engineering

## Research Title: Microfluidic devices for geosciences and underground porous media

### Geoengineering

SESSION: SUMMER 2021

<b>Funded by</b>	DIATI/DISEG/Ateneo fondi CRT
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<b>Context of the research activity</b>	Microfluidic devices, or micromodels represent a valuable tool for the description, characterization and understanding of the physical phenomena governing fluid flow in porous media, such as fluid properties, solid-fluid and fluid-fluid interaction properties, phase trapping, wettability modification, solids deposition or emulsions, etc..
<b>Objectives</b>	This PhD activity will be based on a multidisciplinary and integrated approach to develop novel synthetic microfluidic devices dedicated to the study and comprehension of natural phenomena occurring in porous media. In particular, the research activity will be focused to the development of innovative technological approaches for the design and fabrication of advanced microfluidic devices with the aim of characterizing multiphase flow behavior under relevant thermodynamic conditions. Such microfluidic devices will be conceived, designed and fabricated as micromodels for both fundamental studies in geosciences, and as innovative tools to model and describe fluid flow in underground porous media.

**Skills and competencies  
for the development of  
the activity**

A well-demonstrated background in material sciences and Engineering. Significant laboratory experience focused on experimental activity on polymeric materials, porous materials and additive manufacturing. A good knowledge of common chemical/physical methodologies for materials characterization.