

Gianluca Gerardi

Nationality: Italian

Background: I have earned my bachelor and master degree in Chemical and Sustainable Process Engineering at Politecnico di Torino (Turin, Italy), focusing my studies in technologies for renewable energy production.

In my bachelor thesis, I studied the impact on a specific territory in terms of biogas and/or compost production related to the treatment of the biodegradable fraction of municipal waste. Instead, for my master thesis, I spent one year at Italian Institute of Technology (Turin, Italy) working on the development of a photoelectrochemical cell for the sun-driven water splitting ([S. Hernandez, G. Gerardi, K. Bejtka, A.Fina, N. Russo, Appl.Catal B:Environ. 190 \(2016\)](#))

Research interest: During the educational journey of my last years, I became interested in the broad field of fluid dynamics. I find extremely fascinating the analytical modelling and the numerical approach used to investigate the different types of flow. I believe that the development of efficient numerical and experimental methods in this scientific field is crucial for a better understanding of natural phenomena, as well as for the design of sustainable industrial processes

Current project: CREEP project - The aim of this project is to understand the origin and morphology of convective instabilities in colloidal dispersions. The project will involve laboratory experiments using thermoreversible colloidal dispersions, with a focus on the conditions required for one-sided subduction, as well as analytical modeling using a rheology based on the extensive rheometrical database built up at FAST since 2010. As a first research problem, a numerical simulation based on the Boundary-Element Method will be developed in order to elucidate the dynamics of two plates interacting along the subduction interface