

## High-fidelity CFD simulations to understand the physics of the jet wiping process in galvanization

(Scientific Lecture track)

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**Abstract:** *This work deals with the 3D two-phase simulations of the jet wiping process, conducted with the OpenFOAM CFD libraries. In this coating process, a plane gas impinging jet is used to reduce and control the thickness of a liquid film withdrawn from a bath by a substrate moving upwards. This process is inherently unsteady, leading to the formation of large amplitude waves on the final coating. Because these non-uniformities are suspected to originate from large-scale oscillations of the gas jet, the vortical structures dominating the gaseous flow have to be accurately computed. Four test cases are simulated with the two-phase flow solver interFoam, using the Smagorinsky Large Eddy Simulation model and the Volume of Fluid method for the tracking of the interface. The unsteady characteristics of both the jet and the liquid are analyzed and the results are validated against experimental data. They confirm the existence of a hydrodynamic feedback between the runback waves and the gas jet.*

**Bio:** She holds a PhD in Applied Sciences from the Université Libre de Bruxelles (Belgium) in 2007. She develops her investigation activity in the field of fluid mechanics applied to industrial processes, with a special interest in the metallurgy and naval sectors. Since April 2017, she is the director of the Centro de Investigaciones Tecnológicas, one of the 4 research centers of the UDC, which has 8 groups and 100 researchers in total.