

# Experimental investigation of the interaction between premixed flames, vortices and turbulence

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**Abstract** The talk will be divided in two parts. The first one will deal with turbulent Bunsen flame, and especially, the scale analysis of the flame front structures using modal decomposition. The goal is to highlight properties of turbulent flames and relevant modelling parameters. Particular emphasis is shed to the scales responsible for the flame brush and the wrinkling of the flame front. The flame front curvilinear length is analysed as a function of the mode (or equivalently the scale) and yields the well known S-curve that is usually observed using fractal analysis. The second part will present some recent experiments of flames interacting with vortices. The goal is to use these experiments to identify the efficiency of different vortices to wrinkle the flames. Special emphasis will be put on the method used to generate the vortices and the data processing.

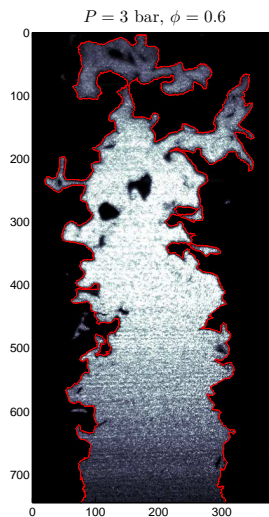


Figure 1: Lean turbulent Bunsen flame highlighted by olive oil droplets