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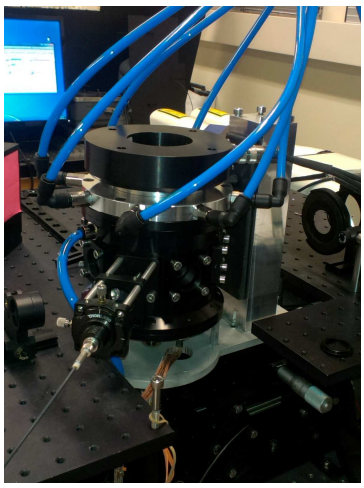
From 10.09.2018 till 14.09.2018 I was visiting the Institute Universitaire des Systemes Thermiques Industriels UMR CNRS N° 7343 at Marseille. The purpose of my visit was to increase my skills in experimental work with ultrasonic levitator and ultrafast image optical detecting system (ultrafast CCD camera).



During this visit I broadened my knowledge about ultrasonic levitator and its application for trapping of pure liquid droplets and droplets of suspensions. The ultrasonic levitator is versatile tool for contactless study of liquid droplets but it has it limitations. Only the droplets with certain size (depends on sound wave length) and relation between surface tension and viscosity, can be held in the sound levitator. Also the properties of atmosphere that surrounds the droplet has influence on the temporal evolution of it size and shape. So it is necessary to put the ultrasonic levitator inside the climatic chamber with possibility to control the humidity and temperature of the surrounding atmosphere. The ultrasonic levitator with eight optical ports and system of atmosphere control is presented on **Fig. 1**.

**Fig.1.** The ultrasonic levitator with climatic chamber.

For collecting the experimental data the ultrafast CCD camera was used. The usage of ultra fast camera was necessary for detecting the frequency of the natural oscillation of the caught droplet. Also the light of high intensity should be used for illumination of droplets **Fig2**. Because the time of recording is very small (10 000 fps).

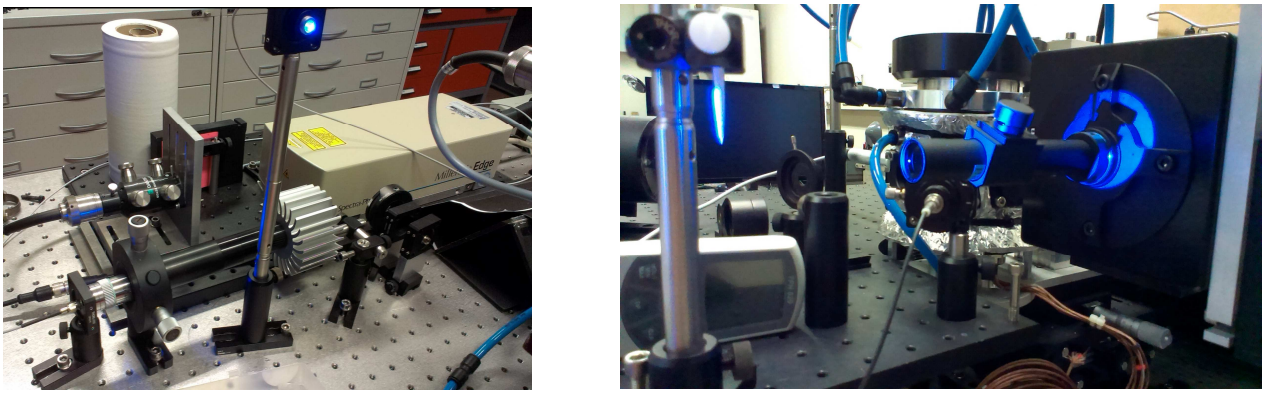


**Fig.2.** The light source (left panel) and ultrafast CCD camera (right panel)

But not only the evolution of a levitated droplet is interesting. For droplets of suspensions/nanofluids, a range of final aggregate with different geometry was obtained depending of the amplitude of acoustic wave and environmental condition **Fig.3**.

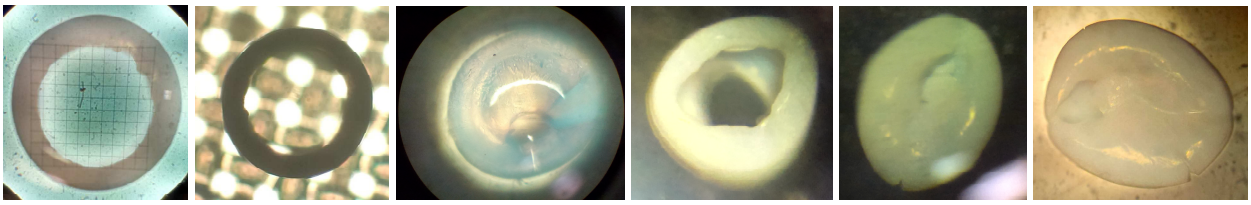


**Fig.3**. The final aggregates (the images were taken with an optical microscope)

The results obtained during this visit gave me a stimulus to investigate droplets of suspension in great detail.