

**Course offered for the PhD program  
in Civil, Chemical and Environmental Engineering  
Curriculum in Chemical, Material and Process Engineering –  
a.a. 2019/2020 (cycles XXXV, XXXIV and XXXIII)**

(possibility of participation for students in other PhD cycles or other PhD courses)

**1. Title**

Properties of surfaces and solid-liquid interfaces

**2. Course Description**

The course aims to provide to future PhDs notions and fundamentals on interfaces nature and on the methods for their characterization.

The course will include the following topics:

1. **Rheological characterization of materials:** fundamentals of rheology, viscosity, yield stress, rheological flow curves of non-Newtonian fluids (shear thinning, shear thickening).
2. **Wetting:** surface tension and surface energy, work of adhesion, static and dynamic contact angle, Z potential and isoelectric point, DLVO theory;
3. **Case studies:** Specific studies on dispersions of ceramic powders in different liquid phases, surface LIS (Liquid Infused Surfaces) at low drag coefficient.
4. **Laboratory training:** rheological tests of mono and biphasic systems and wetting measurements of solid materials surfaces.

**3. Course Organization**

The course, organized into a single module, will consist of classroom lessons and practical laboratory training. The course will be held in Italian or English according to the students request.

**4. Teacher**

The course teacher will be Dr. Alberto Lagazzo.

**5. Duration and credits**

The course (12 hours) will consist of 4 lessons, 2 hours each, and a 4 hours tutorial in the laboratory, for a total of 2 credits.

**6. Activation mode and teaching period**

The course will be held during the period January-February 2019 and a detailed calendar for lessons will be given to registered students.

**7. Deadline for registration**

Registration to the course must be made before January 15<sup>th</sup>. Students are requested to inform teacher by e-mail ([alberto.lagazzo@unige.it](mailto:alberto.lagazzo@unige.it)) about their registration.

**8. Final exam**

The final exam will consist in an interview on the topics covered by the course. The students are requested to contact teacher by email to establish the date of the exam.