Universidade Federal do Rio Grande do Sul
Instituto de Química
Graduate Program in Chemistry (Grade 7/CAPES)
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COURSE SYLLABUS

1. Identification

Code and title: QUP 170 – Special Topics in Physical Chemistry of Surfaces and Colloids
Professors: Irene Teresinha Santos Garcia and Alexandre Hahn Englert
Level: Master and Doctorate
Credit hours: 2
Revised: June_2020

2. Summary

Approach to properties and concepts such as contact angle. Flotation. Electrified interfaces: the electrical double layer. The van der Waals theory of forces. Interaction between double layers and particle coagulation. Association colloids. Self-organized nanostructures.

3. Objective

Enable the graduate student to deepen their knowledge in physical chemistry of surfaces and colloids from the detailed study of selected topics, aiming at a more solid understanding of this area of physical chemistry.

4. Contents

- Electrified interfaces: the electrical double layer
- The theory of forces by van der Waals
- Interaction between double layers and particle coagulation
- Association colloids
- Self-organized nanostructures: principles and practice.
- Contact angle. Contact angle hysteresis. Experimental methods and contact angle measurements. Theories of contact angle phenomena.
- Wetting. Water repellency. Flotation.

5. Assessment

Presentation of two seminars and a paper at the end of the semester.The student, who obtains a final grade of A, B or C, awarded as per the list below, will be considered approved:
A: grade equal to or above 9.0
B: grade equal to or above 7.5 and below 9.0
C: grade equal to or above 5.0 and below 7.5
D: grade below 5
FF: lack of frequency

6. Methodology

Lectures, exercises lists, seminars and examinations.

7. Bibliography

- Tadros, Tharwat F., Basic Principles of Interface Science and Colloid Stability, [N.p.]: De Gruyter, 2018, eBook.

- Everett, D.H., Basic Principles of Colloid Science, Cambridge: Royal Society of Chemistry, 2007. eBook
- Colloids and Surfaces A: Physicochemical and Engineering Aspects (ISSN: 0927-7757)
- Langmuir (Web Edition ISSN: 1520-5827)
- Journal of Colloid and Interface Science (ISSN: 0021-9797).