INTERFACIAL PHENOMENA

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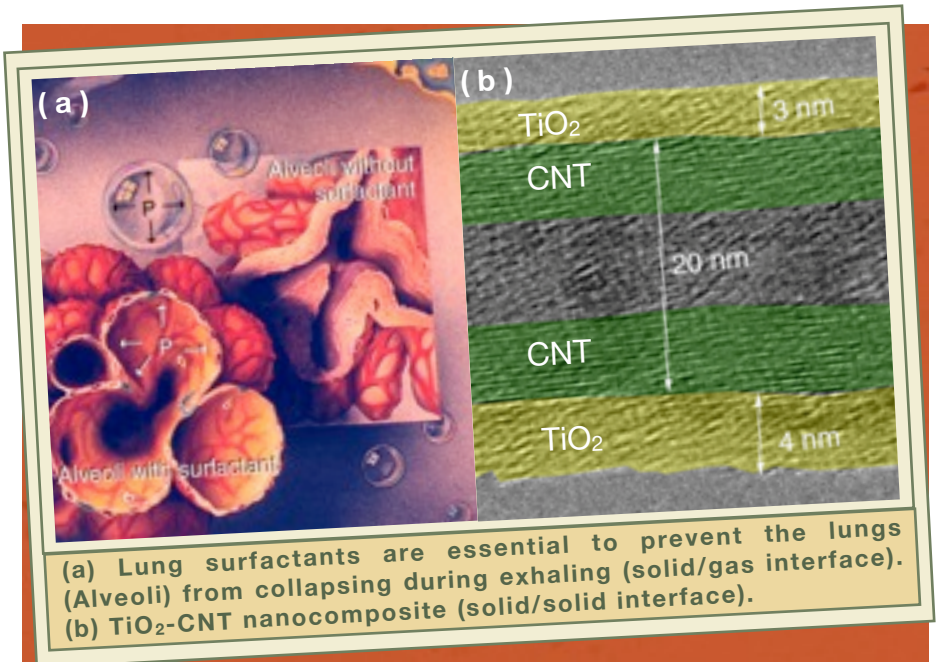
REGISTER FOR 2 CREDITS (ECH6726) OR 3 CREDITS (EMA6905)



(a) Lung surfactants are essential to prevent the lungs (Alveoli) from collapsing during exhaling (solid/gas interface). (b) TiO_2-CNT nanocomposite (solid/solid interface).

An interface is defined as the area where two immiscible faces meet. Such interfaces include solid/liquid, solid/gas, gas/liquid, liquid/liquid or solid/solid, including organic/inorganic interface.

WHY INTERFACIAL PHENOMENA IS SO IMPORTANT, ESPECIALLY IN NANO/BIO TECHNOLOGIES?

Interfacial Phenomena are important in a wide variety of practical applications; from the stability of slurries, nanoparticles for bio-imaging and therapies, and foams to the formation of deltas in big rivers. Applications such as polishing slurries used for manufacture of computer chips, emulsions and aerosols used in drug formulations, functionalized nanoparticles for drug delivery/ diagnostics/ therapies; foams/ emulsions for soil remediation, nanocomposites for advanced materials for space and other emerging applications - all are governed by the interfacial phenomena.

Q-Dots for bio-imaging.

Interfacial phenomena become even more important at nanoscale, since the mix of forces involved changes drastically from micro to nanoscale.

Who & why?

Who should take the course?

The course is primarily designed for graduate students who are conducting research in any area impacted by one or more of the interfaces mentioned.

In the past, students from the following departments have enrolled in the course: Materials Science and Engineering, Chemical Engineering, Environmental Engineering, Soil and Water Science, Biomedical Engineering, Chemistry, Pharmacy, and Food Science & Human Nutrition.

Cosmetics.

Why should you take the course?

The overall scope of the course is to familiarize the students with the fundamentals and applications of interfacial phenomena in existing and emerging fields including nano and nano/ bio systems (e.g., ceramics, electronics, polymers and medical sciences).

Scientifically, the students would acquire knowledge in areas from material synthesis to drug discovery to photocatalytic degradation of hazardous microbes to development of safe and useful products and devices. The lectures are highly interactive with integration of fundamental knowledge in cutting edge practical applications, illustrated by real case studies.