

## **Structured Materials for Cosmetic Applications.**

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In cosmetic science a great diversity of materials are used to protect or improve the structural and sensorial properties of the cosmetic substrate (hair and skin). From shampoos to lacquers or gels, materials are used commonly used to perform a particular function (mechanical , optical, etc.).

Knowledge of the structure and nature of the cosmetic substrate is essential if we want to clearly determine the degree of improvement of its physical properties. This description will be further illustrated with a few examples of our current research efforts deciphering the physical chemical properties at the bulk and surface level and at the macro, micro and sub-microscopic scale.

For hair's surface repair we will describe the nature and properties of polymers commonly used in shampoos and conditioners. Alternatively, in the case of fiber reinforcing materials, we will focus on our recent sol-gel based strategies to allow the penetration of big macromolecular materials. Finally we will present examples of rheological behavior of gel formulations present in common products as a result of its degree of micro or nano-structuration. We expect these examples can be interesting challenges for modeling efforts in the field and help in the future better study how these materials can be effectively tuned to the consumer's advantage.