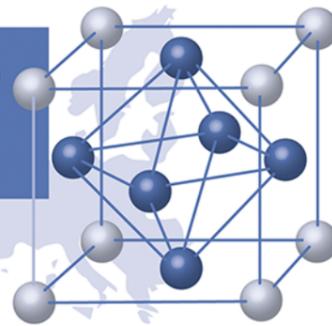


**ICCRAM Scientific Conference Series on  
Advanced Materials, Critical Raw Materials  
and Industrial Technologies**

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## Investigating the structural fluctuations of DNA: Physics or Biology?

**Dr. Michel Peyrard**

**Ecole Normale Supérieure de Lyon, France**

Professor Michel PEYRARD is emeritus professor in Ecole Normale Supérieure de Lyon, France, and honorary member of the prestigious Institut Universitaire de France, where he holds the chair of Nonlinear and Biological Physics. He has been vice-director of the Ecole Normale Supérieure de Lyon. His research evolved from nonlinear science to biological physics, and particularly the study of DNA fluctuations. Michel Peyrard introduced, with A. Bishop, a nonlinear model for DNA statistical physics, which became a standard model which inspired many other researchers. Professor Michel Peyrard has been a member of the Commission of Biological Physics (C6) of the International Union of Pure and Applied Physics (IUPAP). He is currently a member of the Conseil de Programmation Scientifique of the Institut Henri Poincaré in Paris.

**Salón de Actos de la Facultad de Ciencias  
24 de noviembre de 2015  
12.00 horas**

**“DNA is not only an essential object of study for biologists, it raises fascinating questions for physicists too”.**

The famous double helix is not the static object that structural pictures show. The storage and processing of genetic information involve large scale distortions. Heating can lead to a separation of the two strands, which is a one-dimensional phase transition which poses fundamental questions to statistical physics. Besides the standard physical approaches such as neutron scattering studies, tools developed by biologists can be used to study those fluctuations with an accuracy that could not be achieved for an ordinary polymer. DNA flexibility, which is important for biology, is also related to its fluctuations. The talk will present experimental and theoretical studies of DNA structural fluctuations, and discuss their possible interest for biology... and physics. In a last part it will also give a glimpse of recent developments which use DNA as a building block for nanomaterials and nanomachines, to illustrate the richness of the physics of this remarkable molecule.

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