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19th Nano Congress for Next Generation

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Introducing backside absorbing layer microscopy (BALM)

BALM is a new wide field optical microscopy which is remarkably suited for nano enginnering. Most of the time, nano-objects have to be fixed on surfaces in order to be localized, handled, or used in combination with some environmental control. BALM is a surface imaging technique which combines extreme (say SPR-like) sensitivity with full optical resolution. Moreover, its implementation is confined in the half-space located below the sample, so that the upper half-space remains free for implementing environmental tools such as a fluidic cell, spectroscopic tools such as Raman analysis, local measuring tools such as electrical and SPM probes or local fields of any type. At last, it is a real time technique, hence offering large possibilities for kinetic studies. Thanks to a close collaboration with Vincent Dreycke, Stephane Campidelli and Renaud Cornut in the LICSEN group of CEA Saclay, the power of the technique in the study of 2D materials was recently demonstrated. The aim of this talk is to forecast the next coming BALM applications, supported by preliminary results obtained with various kinds of nanoparticles, sensor chips and solid liquid interfaces. The first principles of the technique will also be exposed.

Biography

Dominique Ausserré completed his PhD in Collège de France, Paris. He has been a Visiting Scientist in IBM, San Jose. He started a soft matter lab in Institut Curie, Paris, and then moved to Le Mans University in 1991. He is a Research Director in CNRS, France, and worked in the fields of optics, polymer and statistical physics, material science, capillarity and surface physical chemistry, now moving towards biology and healthcare oriented technological developments. He invented self-assembled nano-composite materials made of nanoparticles and diblock copolymers, self-assembled polar lamellar materials named ferrochemicals, and the surface-enhanced ellipsometric contrast (SEEC) technique and backside absorbing layer microscopy (BALM) optical techniques. He was Co-founder of two startups : Nanoraptor and Watch Live.

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