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Backside antireflecting layer microscopy - Application to graphene imaging

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Graphene is one of the most promising materials for microelectronics, biotechnology and energy science. Therefore specific characterization tools are important in order to qualify graphene production, to control graphene sheet arrangements, to probe graphene chemistry, and to quantify intercalation of impurities in graphene stacks.

The current tools used to get such information are optical reflectance imaging on Si/SiO₂ substrates, Raman imaging and scanning electronic microscopy. We will briefly review the advantages and drawbacks of these methods.

Then we will introduce a new technique which we name Backside Antireflecting Layer Microscopy (BALM), and its application to graphene imaging.

We will present images of graphene sheets as obtained with this technique in a few minutes and with low cost equipment, both in air and in water. From our knowledge, they are the best optical images of graphene monolayers ever obtained.

Finally, considering the unique advantages of this emerging BALM technique, we will try to imagine how it could impact the development of graphene uses and functionalities.

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Biography

Dominique Ausserre has completed his PhD in 1985 in College de France, Paris. he joined the CNRS in 1986 and was a visiting scientist in IBM Almaden in 1987. He started a new lab in Institut Curie in 1988, and moved to Universite du Mans in 1991. He is director of research in CNRS since 1993. As the main inventor of the SEEC technique, he launched the start-up Nanoraptor in 2001. He has published more than 60 papers in reputed journals and filled about 15 patents, covering from instrumental optics to the physics of surfaces, complex fluids and polymers.

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