**Prof. Jordi Martorell**

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Prof. Jordi Martorell (JM) received a PhD in Physics from Brown University (USA). Since then JM has been engaged in the study of light-matter interaction within several kinds of micro and nanostructures. Among other contributions to the field, JM and his co-workers pioneered the study of the spontaneous emission control in photonic crystals, and reported the first experimental demonstration of inhibited spontaneous emission using 3-D photonic structures such as colloidal crystals. In 1998, JM became an associate professor at the UPC where he laid the groundwork for the study of the nonlinear interaction within ordered nano-structures. Among several key contributions made, stand out the first experimental demonstration of phase matched second harmonic generation in centrosymmetric materials and the first experimental demonstration of an enhanced quadratic nonlinear interaction at defect modes of photonic structures. More recently JM extended the study of the nonlinear interaction to materials that exhibit a random distribution of the nonlinear domains. In 2005, JM was appointed a group leader at ICFO, where he launched, two years ago, a new program to investigate the effect of nano-structuring in organic photovoltaic materials. One of the main goals of the program is to use the photon control provided by the photonic structure to enhance the efficiency of organic solar cells. Key concepts that are being considered involve the control of fluorescence in high quantum yield photovoltaic materials to enhance the energy conversion efficiency, the use of multilayer structures to enhance light harvesting, and the use of nano thick semi-transparent metals as electrodes to replace transparent conductive oxides as ITO. The activities carried out by the group in this area are supported by national projects as well as European projects. Some of the projects are carried out with several industrial partners in the area of Barcelona. The group is a member of the Photonics4Energy network of excellence. Below there is a list of the 10 most relevant recent publications:


2. J. L. Domínguez Juárez G. Kozyreff, and Jordi Martorel, Whispering Gallery

3 Saverio Pasini, Xavier Elias, Luat T. Vuong, Rafael Betancur, Roberto Macovez, and Jordi Martorell, Fluorescence control to increase the exciton diffusion length in organic photovoltaic materials, in preparation.


