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Plastic solar cells: Alternative and promising energy source

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Organic semi-conducting molecules and polymers are of great importance for physics, chemistry, optics, material sciences, and engineering [1-3]. One use of these organic compounds is in developing plastic photovoltaic (PV) cells. These devices have attracted great attention in the research and technological community due to their potential advantages over inorganic-based solar cells as a new renewable, clean and economical energy source [2-4]. Although high efficiencies above 10 % have been reached in the laboratory for some particular OPVs devices, a more complete understanding of their performance is required. To improve this performance, research groups are focusing on topics such as: new organic materials, both low molecular weight molecules [3] and polymers [2,4]; novel architectures, new nanotechnologies, different deposition methods, several kind of electrodes, control of film morphology and thickness [1]. Likewise, new approaches for device making under vacuum free process and testing capabilities for the fast evaluation of promising materials are always desirable [5-8]. In this talk a general trend on OPVs cells will be discussed as well as the research being conducted by the Group of Optical Properties of Materials (GPOM) from Centro de Investigaciones en Óptica (Optical Research Center) (CIO), in collaboration with Chemistry Departments of different institutions, particularly, the progress on the ideas and goals of our (CIO-UNAM-CINVESTAV-UAM (Spain)) CONACyT-SENER project on this topic. Further, objectives and goals on this research within the Mexican network of *Centro Mexicano de Innovación en Energía Solar, IER-UNAM-CeMIE-Sol, (CONACyT-SENER)* will also commented. At GPOM-CIO, the largest OPVs cells efficiency reached until now is around 5 %. As far as is known, GPOM-CIO is the only Mexican group that has reached this efficiency value in OPVs cells, which is expected to improve it up to 7 % in less than one year from now.

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