

## **Study of dye-sensitized solar cells via computational simulation**

Tarciso Silva de Andrade Filho

Faculdade de Física, Universidade Federal do Sul e Sudeste do Pará - Campus Marabá

Marabá – Pará, Brazil. Skype: tarciso.afilho

**Abstract:** It is known that the main source of energy used in the world, fossil fuels, causes several problems to the environment. Thus, in order to minimize these problems one must replace these sources with other clean sources. The sun is an inexhaustible source of energy. Photovoltaic energy makes use of the sun energy and converts it into electricity. It could provide to mankind energy in a sustainable way. In this lecture we will explain how dye-sensitive solar cells work via computer simulation. This explanation is made from an analysis of the electronic and optical properties of the dyes in the gas phase, as well as a complex (dye + semiconductor). The process of formation of the complex via adsorption will be also taken into account.