

Some applications of optical spectroscopy in the UV-NIR range in science and industry

Plenary Talk by E. Solarte

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Abstract

The problem of interaction between radiation and matter was in its general aspects clarified with the formulation of quantum mechanics and led to its scientific and technological practical applications since the end of the 20th century. The rebirth of optics, due among other factors to the commercial appearance of the lasers and above all the consolidation of photonics, such as technology and engineering of light, have allowed scientific advances and technological developments that cover a broad spectrum of areas of sciences of sciences and engineering. In this context, defined by the proliferation of laser sources and LEDs and new and better methods and systems for the detection of light, a set of classical and quantum applications of electrodynamics is framed and in them those related to the natural sciences stand out fundamental (physical, biology and chemistry) and those directly related to the environment, human health, agriculture and engineering, which today use and need light and their technologies for their development and application. This conference will discuss the effects of light on different scales, from the atomic and molecular level to the macroscopic level of real systems, the need and uses of optical and photonic methods will be displayed and especially of spectroscopy as a survey method as a method of survey and information collection and the topic will be illustrated with experimental results, some of them carried out in our laboratories.