University of Crete
Department of Physics

40 Years Anniversary Colloquium Series

Thursday, 10 May 2018 | 17:00 – 18:00, Seminar Room, 3rd floor

Light beyond Lighting, frontiers in Lighting Technologies:
The human-centric intelligent lighting challenge

Prof. George Zissis
Université Toulouse 3 – LAPLACE, France

ABSTRACT

Since the human race emerged it has been known that fire and heated objects emit light that can be used for lighting purposes; artificial lighting has been discovered. Since of 19th-century end, artificial lighting has been the subject of a continuous and fascinating evolution; 20th century scientists and development engineers worldwide created such a wide range of lighting solutions for every lighting application.

Today, the importance and application of these "legacy" lighting technologies is decreasing. During the last decade, Solid-State Lighting (LEDs, O-LEDs, solid-state lasers) challenges conventional technologies. In particular, LED has turned into a game changer beating the conventional technologies in all aspects. It is therefore anticipated that in short term, all of electric lighting will be based on SSLs. Should SSL revolution proceed to the projected conclusion, replacing all legacy technologies, there will be a further major change in the lighting market.

Artificial light production absorbs 15% of the world's electricity annual production. Therefore, past century's research and development focused on single energy efficacy enhancement. Consequently, we knowingly were not serving society as effectively as we could. Industry has coined a new term "human-centric lighting" to draw renewed attention to its primary effort to be successful in meeting society's needs. Furthermore, we are witnessing a transition from the conventional "analogue" lighting technologies to "digital" lighting. Intelligent lighting will become the backbone for smart homes and smart cities. This way, lighting will become the heart of the "Internet of Things".