



**Theoretical and Physical Chemistry Institute  
National Hellenic Research Foundation**

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**LECTURE**

**“Laser processing of functional micro/nanostructures”**

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**Amphitheater, ground floor, NHRF**

# **Laser processing of functional micro/nanostructures**

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The development of nanotechnology has contributed to important advances in various fields, such as medicine, biotechnology, material science, microelectronics, energy harvesting, environmental quality, space exploration, and security, among others. The need for advanced materials and systems with new functionalities has motivated the development of nanostructures on solid surfaces, which are necessary for the fabrication of functional nanodevices for nanotechnological applications.

In this talk, we will discuss the development of functional micro/nanostructures, based on laser-processed silicon substrates. Micro/nanostructured silicon is used for novel electronic and photonic systems with advanced properties. Combining silicon micro/nanostructures with thin semiconducting films results in electronic heterojunctions with large active surface area and improved optoelectronic performance. Coating silicon micro/nanostructures with thin metallic films results in plasmonic substrates, which are used for plasmonic optical trapping and surface-enhanced Raman spectroscopy (SERS). We will present recent advances in these fields and discuss future applications.