

Ηράκλειο 21/02/2022

Η ΠΑΡΟΥΣΙΑΣΗ ΔΙΠΛΩΜΑΤΙΚΗΣ ΕΡΓΑΣΙΑΣ

Του φοιτητή **Κωνσταντίνου Μισδανίτη**, θα γίνει την

Πέμπτη 24/02/2022 και ώρα **11:00**

στην Β2 του Κτηρίου Χημείας

Θέμα Διπλωματικής:

«High-resolution and large volume 3D porous media through beam interference nonlinear laser additive manufacturing with applications in photocatalysis»

Επιβλέποντες κ.κ. Στυλιανός Τζωρτζάκης, Μαρία Φαρσάρη

Για την παρακολούθηση της παρουσίασης δια ζώσης, το κοινό θα πρέπει να έχει τα απαραίτητα δικαιολογητικά (πιστοποιητικό εμβολιασμού, νόσησης ή rapid test).

Abstract:

Direct Laser Writing (DLW) by multi-photon polymerization is a well-established technique for the fabrication of sub-100nm resolution three-dimensional structures. However, this technique is time-consuming when the fabrication of large area and complex structures is required, due to the point-by point laser writing configuration. In this bachelor thesis, we propose multi-beam interference lithography as an approach for reducing the processing time, and we employ this method for the fabrication of centimeter-scale area complex micro-featured porous structures for photocatalysis applications.

Multi-beam interference is a method that permits the creation of periodic laser patterns due to the intensity distribution of two or more interfering beams. Here, we properly shaped the laser beam profile, generating different interference patterns, with the use of a Liquid

Crystal on Silicon-Spatial Light Modulator (LCOS-SLM). The generated interference patterns in combination with a high nano-accuracy translation stages system enabled the rapid fabrication of cm-scale periodic three-dimensional porous microstructures.

The laser engineered samples were decorated with ZnO nanorods, using a pulsed laser deposition and chemical growth technique, and were tested for their photocatalytic efficiency.