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About

Ali Mohammadkhani is a Research Associate in the Bio-Medical and Micro Engineering research centre at University of Birmingham.

Ali has published over 10 research papers in scientific journals and refereed international conferences in the fields of nanofabrication, electroforming and surface characterisation.

Qualifications

- MSc in Engineering Project Management, University of Birmingham, 2008
- BSc in Mechanical Engineering, Islamic Azad University (Semnan Branch), 2007

Biography

Ali Mohammadkhani qualified with a BSc in Mechanical Engineering from the Azad University of Semnan in 2007. Next, He graduated from Engineering Project Management program in Mechanical and Manufacturing Department at University of Birmingham in 2008.

In 2009, Ali joined the Bio-Medical and Micro Engineering research centre in School of Mechanical Engineering at University of Birmingham as a PhD candidate.

Ali's current appointment is a Research Associate in the School of Mechanical Engineering at University of Birmingham for the EUMINAfab project. His current research interest is nanotechnology for fabrication of plasmonic structures and studying their applications.

Teaching

Demonstrating on:

- Mechatronics
- Control Engineering

Research

Research in post-doctoral program

This current project is about fabrication of periodic nanostructure on top of glass slides. The slides are going to be used in research activities to develop an SPR-microscopy for detecting single nano particles. Modified nanosphere lithography is identified as an effective tool to pattern the designed structure over large area.

- Nano-plasmonic structures

Research in doctoral program

This project was about development of nano-patterning techniques for creation of novel periodic nanostructures for application such as nano-plasmonics and nano-imprinting at reasonable costs and time. Ali Mohammadkhani has developed series of nanosphere lithography (NSL) techniques as effective methods for producing various nano-arrays in different materials. To this end, he applied combination of NSL with other standard processes like soft lithography and electroforming. Several FE models and surface 3D reconstructions were carried out to investigate the fabrication processes and characterise the achieved results.

- Nanosphere lithography and soft lithography
- Micro and nano-electroforming
- Surface 3D reconstruction and surface characterisation
- Finite Element Analysis

Publications

- H. Hassanin, A. Mohammadkhani, and K. Jiang, "Fabrication of hybrid nanostructured arrays using a PDMS/PDMS replication process," Lab on a Chip, vol. 12, pp. 4160-4167, 2012.
- A. Mohammadkhani, H. Ostadi, and K. Jiang, "Morphological characterisation of submicron PDMS bowl structures," in Nanotechnology (IEEE-NANO), 12th IEEE Conference, Oral, WeA2T5.3, Birmingham, 2012.
- A. Mohammadkhani, H. Hassanin, C. Anthony, and K. Jiang, "Nanopatterning of metallic features over uniformed arrays of microbowl structures," Microelectronic

Engineering, vol. 98, pp. 266-269, 2012.

- H. Hassanin, A. Mohammadkhani, and K. Jiang, "Ceramic nanocomposite by electrodeposition of nickel into porous alumina matrix," in Nanotechnology (IEEE-NANO), 12th IEEE Conference, Poster, P.076, Birmingham, 2012.
- A. Mohammadkhani, H. Hassanin, C. Anthony, and K. Jiang, "Formation of three dimensional nanopattern via nanosphere lithography and soft lithography," in Nanotechnology (MNE), 37th International Micro & Nano Engineering Conference, Oral, O-LITH-20, Berlin, 2011.
- A. Mohammadkhani, M. Malboubi, C. Anthony, and K. Jiang, "Characterization of surface properties of ordered nanostructures using SEM stereoscopic technique," Microelectronic Engineering, vol. 88, pp. 2687-2690, 2011.
- A. Mohammadkhani and K. Jiang, "Fabrication of dual patterned nanocavities using double layer nanosphere lithography," in Nanotechnology (IEEE-NANO), 11th IEEE Conference, Oral, TuA2T1.3, Portland, 2011, pp. 9-12.
- A. Mohammadkhani, M. Malboubi, C. Anthony, and K. Jiang, "Surface property characterization of ordered nanostructure using SEM stereoscopic technique," in Nanotechnology (MNE), 36th International Micro & Nano Engineering Conference, Poster, P-NANO-09, Genoa, 2010.