Ms. Atieh Haghdoost

Materials Science and Engineering
Graduate Student

“Micro-Electrodeposition: Electric field-induced assembly of metal ions on a microelectrode”

ABSTRACT:

Electrodeposition is one of the main fabrication techniques of metallic micro and nano structures due to its ability to produce shapes to close dimensional tolerances with good surface finish and superior metallurgical properties. Based on the process conditions, electrodeposition on a microelectrode may result different structures from nano to single crystalline materials. In fact electrochemical nucleation and growth can be adapted by changing process conditions like electric voltage and electrolyte composition. This talk will present experimental and theoretical study of the effects of the aforementioned parameters on the deposit structure.

On the other hand, for the microelectrodes the edge effect results lateral variation of the deposition rate across the surface. For studying this aspect of the process, electrodeposition in microcavities with a conducting base and insulating sidewalls, was considered. Computational models for the governing transport and electrochemical phenomena were used to simulate the effects of the applied voltage and micromold geometry on the evolution of the electrodeposition front and current density trend.

BIO:

Ms. Atieh Haghdoost is a third year Ph.D. student in the Department of Mechanical Engineering at Virginia Tech. She is simultaneously working toward her M.Eng degree under supervision of Prof. Corcoran in the Department of Material Science and Engineering at Virginia Tech. She received her B.S. and M.s. degree in Chemical Engineering from Sharif University of Technology, Iran. She is currently working on the interfacial aspects of the electrochemical systems and their applications on the micromanufacturing and material characterization under supervision of Prof. Pitchumani in the Advanced Materials and Technologies Laboratory.