FINITE ELEMENT ANALYSIS OF ELECTRODEPOSITION UNIFORMITY IN MICROSYSTEMS

Brief Introduction

In this project you will be expected to reproduce a number of the numerical results from the paper:

HUME EC, DEEN WM, BROWN RA, MASS-TRANSFER ANALYSIS OF ELECTRODEPOSITION THROUGH POLYMERIC MASKS, J ELECTROCHEM SOC 131 (6): 1251-1258 1984

In this paper, the authors explore the influence of geometric and electrochemical kinetic parameters on the uniformity of electrodeposits made through photolithographically-defined masks. Electrodeposition through masks is the basis of many microsystem technologies.

Approach

After you read the paper, we will discuss ways to simplify the paper's approach. The software you will use is FEMLab, which has a very easy user interface. You will be expected to develop a model in FEMlab, and use standard methods to validate your results (comparison to known solutions, grid refinement). The report will describe the problem and present results and discussion in light of the published literature. The implications of these results for microfabrication must be elaborated.