

Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-49-687 **Sadia M. Makky***, Owens College, Perrysburg, Ohio 43551, and **Saad Al-Mo'omen**, University of Baghdad, Baghdad, Iraq. *Novel variational method for solving electrochemical machining as a moving boundary problem.*

Machining a metal part by placing it as the anode in an electrolytic cell is studied as a moving boundary problem. An approximate, quasi-steady, two-dimensional model, in terms of Laplace equation for the electric potential between the electrodes, with an equation that relates the electric field at the anode surface and the dissolution rate at the anode surface, is considered. The problem is solved using a newly developed variational technique. The results seem to be of good agreement with the results when another numerical procedure is used to solve the same problem. (Received September 27, 2004)