## <u>Ingredients for 3D Vacuum Arc Discharge Simulation</u>

M. M. Hopkins, P. S. Crozier, J. J. Boerner, L. C. Musson, T. P. Hughes, R. Hooper, E. V. Barnat, M. T. Bettencourt, Sandia National Labs

We present our current capabilities and plans targeting the simulation of 3D vacuum arc discharge in realistic geometries. In particular, we will present our progress on unstructured mesh PIC-MCC methodology, dynamic particle weighting, managing multiple temporal and spatial scales, electrode models, and efficient parallel scaling. A number of examples demonstrating these capabilities will be provided.