SEM for Plasma Coating Evaluation

Joachim Heberlein
Mechanical Engineering, University of Minnesota

NNIN Facility utilized: Characterization Facility

Scanning Electron Microscopy has been an essential part in the evaluation of plasma deposited coatings. Coatings are characterized by analyzing cross sections with regard to density and morphology, and by analyzing single splats of molten particles after they hit a substrate. In both cases, image analysis techniques are used to quantify the images. Recent results have provided correlations between coating quality and coating equipment design parameters, such as plasma torch nozzle design modifications to achieve better process reproducibility. These results supplement measurements of plasma jet appearance and spray particle velocity and temperature.