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**Synthesis of Silver Nanoparticles in Ionic Liquids by Electron Irradiation** ANGELA CAPECE, The College of New Jersey — Silver nanoparticles exhibit unique optical, catalytic, and antibacterial properties as a result of their shape and size, making them useful for a variety of applications. Conventional nanoparticle synthesis methods often require high pressures and the use of toxic materials such as organic solvents, reducing agents, and stabilizers. However, plasma synthesis in ionic liquids provides an alternative that circumvents these requirements. As a result of their low vapor pressure, ionic liquids can be combined with low-pressure plasmas to produce metal nanoparticles through the reduction of dissolved metal salts by the reactive species produced in the plasma. In this work, we demonstrate the synthesis of silver nanoparticles by irradiating a solution of AgBF4 powder in the ionic liquid, 1-butyl-3-methylimidazolium tetrafluoroborate, with a 15-kV electron beam. The liquid droplet was imaged during irradiation using a field emission scanning electron microscope (SEM). The size and morphology of the resulting nanoparticles were characterized using SEM, and the particle composition was determined using energy dispersive X-ray spectroscopy and X-Ray photoelectron spectroscopy.

Angela Capece
The College of New Jersey

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