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Coalescence Processes of Ag Nanoparticles. A case of Surface Plasmon Resonances.¹ EDISON DA SILVA, Instituto de Física, Unicamp, Campinas, SP, Brazil., GIOVANI FACCIN, Faculdade de Ciências Exatas e Tecnológicas, UFGD, Dourados, MS, Brazil., MIGUEL SAN MIGUEL, Instituto de Química, Unicamp, Campinas, SP, Brazil., JUAN ANDRES, Departamento de Química Física i Analítica, UJI, Universitat Jaume I, Castellon de la Plana, Spain., ELSON LONGO, Instituto de Química, UNESP, Araraquara, SP, Brazil. — A novel process, the formation and growth of metallic Ag nanowires (NWs) and nanoparticles (NPs) on Ag_2WO_4 upon electron beam irradiation has been discovered and was extensively investigated by different experimental techniques, transmission electron microscopy (TEM), field emission scanning electron microscopy (FE-SEM), energy dispersive spectroscopy (EDS) characterization, among others. Ag metallic NWs grow on Ag_2WO_4 , and further observation showed the formation of Ag NPs formed from the Ag filaments during exposition to the electron beam. The present work concentrates in the study and the understanding of physical processes that occur with these new Ag NPs and their interaction. The experiments found the formation of Ag NPs of sizes from 2 to 15 nm. These NPs produced in vacuum show very interesting behavior displaying coalescence effects with two nearby NPs forming other large particles. Associating theory and computer simulations we model this evolution process that is driven by plasma resonance effects due to the electron beam.

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