Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Modification of particle growth in a highly magnetized argon-acetylene plasma. SURABHI JAISWAL, Auburn University, VINCENT HOLLOMAN, Tuskagee University, LENAIC COUDEL, University of Saskatchewan, Saskatoon, Saskatchewan S7N 5E2, Canada, EDWARD THOMAS, Auburn University, LENAIC COUDEL COLLABORATION, VINCENT HOLLOMAN COLLABORATION — Nanoparticle growth in plasmas is of strong research interest due to its implications in astrophysical, industrial, and fusion plasma applications. In the presence of a high magnetic field, nanoparticle growth can be even more complicated where these particles generated due to plasma surface interaction and their presence can significantly affect the electrical properties of the plasma. In this presentation, an experiment on nanoparticle growth in highly magnetized argon-acetylene plasma is presented. In these studies, the magnetic field alters the plasma dynamics and at very high magnetic field ($B \geq 1$ T) a 'filamentary structure' (which is a distinct, localized regions within a plasma that appears brighter than the surrounding plasma and that extends parallel to the magnetic field lines) forms in between the electrode. It is found that the nanoparticles grown in the plasma can act as a "sink" for the filamentary structure leading to them being suppressed. Simultaneously, particles grown in these filamentary structures significantly affect the particles morphology. This presentation reports on the effect of magnetic field on particle growth and discusses the ex-situ analysis of the properties of grown nanoparticles. This work is supported with funding from the NSF EPSCoR program (OIA-1655280) and the NSF/DOE Partnership in Basic Plasma Science and Engineering programs.

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Date submitted: 03 Jul 2019 Electronic form version 1.4