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The influence of the secondary electron induced asymmetry on the Electrical Asymmetry Effect in capacitively coupled plasmas JULIAN SCHULZE, Ruhr-University Bochum, IHOR KOROLOV, ARANKA DERZSI, ZOLTAN DONKO, Hungarian Academy of Sciences — In geometrically symmetric capacitive radio-frequency plasmas driven by two consecutive harmonics a dc self-bias can be generated as a function of the phase shift between the driving frequencies via the Electrical Asymmetry Effect (EAE). Recently the Secondary Electron Asymmetry Effect (SEAE) was discovered (T. Lafleur, P. Chabert and J.P. Booth *J. Phys. D: Appl. Phys.* 46 135201 (2013)): unequal secondary electron emission coefficients at both electrodes were found to induce an asymmetry in single frequency capacitive plasmas. Here, we investigate the simultaneous presence of both effects by Particle in Cell simulations, i.e. a dual-frequency plasma driven by two consecutive harmonics with different electrode materials. We find, that the superposition of the EAE and the SEAE is non-linear, i.e. the asymmetries generated by each individual effect do not simply add up. The control ranges of the dc self-bias and the mean ion energy can be enlarged, if both effects are combined.

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