**Theoretical analysis of direct current glow discharge plasma in a coaxial structure** ALIREZA NIKNAM, Laser and Plasma Research Institute, Shahid Beheshti University, G.C., Evin, 1983963113, Tehran, Iran, SABER ABDI, Laser and Plasma Research Institute, Shahid Beheshti University, G.C., Evin, 1983963113, Tehran, Iran., AHMADREZA RASTKAR, Laser and Plasma Research Institute, Shahid Beheshti University, G.C., Evin, 1983963113, Tehran, Iran — The direct current (dc) glow discharge plasma in a gas medium is widely used in the material processing industry and thin film deposition. Therefore, the modeling of the dc discharge at low pressure Argon plasma in a coaxial structure is presented. This structure consists of three media: plasma, dielectric and air. This system surrounded by a long cylindrical loss-free metal with a metallic rod in its center. Also, the model is based on the diffusion theory of gas discharge. Therefore, the radial electron density profile in the plasma region is obtained using the diffusion equation. Then, solving the Poisson's equation and considering the appropriate boundary conditions, we investigate the radial distributions of the dc electric field and potential in this coaxial configuration.

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