

A One Dimensional Particle in Cell Model for Excimer Lamps

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Abstract : In this work we study a planar lamp filled with neon-xenon gas. We use a one-dimensional particle in a cell with Monte Carlo simulation (PIC-MCC) to investigate the effect xenon concentration on the energy deposited on excitation, ionization and ions. A Xe-Ne discharge is studied for a gas pressure of 400 torr. The results show an efficient Xe20-Ne mixture with an applied voltage of 1.2KV; the xenon excitation energy represents 65% form total energy dissipated in the discharge. We have also studied electrical properties and the energy balance a discharge for Xe50-Ne which needs a voltage of 2kv; the xenon energy is than more important.

Keywords : dielectric barrier discharge, efficiency, excitation, lamps

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