Contribution ID: **109** Type: **Poster Presentation**

Effects of pulsed magnetic field on performances of semiconductor devices

Friday 8 July 2016 14:40 (20 minutes)

The electromagnetic launch system generates strong magnetic field radiation when discharging, which may degenerate or even destroy the function of semiconductor devices. Based on fundamental theory of Electromagnetics and Semiconductor Physics, this paper established magnetic injury effect model of typical semiconductor devices, such as diode, transistor and etc. The relation equations of magnetic induction density and these devices'output parameters, which involving forward voltage drop and electrode current, was abtained through the derived equations between magnetic induction density with semiconductor mobility and scattering rate. To test and verify the model, experiments was designed to study effects of pulsed magnetic field on characteristic parameters of typical semiconductor devices. In addition, the relation curve between magnetic flux density and these parmeters was abtained in accordance with the experiment data. Finally, the equation of scattering rate was corrected according to the relation curve to improve the theoretical model, and the improved model approximately agreed with the experimental results.

Author: Mr YANG, Yang (Hua zhong University of Technology and Science)

Co-authors: Mr LIN, Fuchang (Huazhong University of Science and Technology); Mr HU, Jinchang (Huazhong University of Science and Technology); Mrs DAI, Ling (Hua zhong University of Technology and Science); Mr ZHANG, Qin (Huazhong University of Science and Technology)

Presenter: Mr YANG, Yang (Hua zhong University of Technology and Science)

Session Classification: Poster 3-A

Track Classification: Plasmas, Discharges, and Electromagnetic Phenomena