COMPARATIVE STUDY OF LOW-TEMPERATURE GROWN AND SEMI-INSULATING GaAs PHOTOCONDUCTIVE EMITTERS FOR ULTRABROADBAND TERAHERTZ RADIATION

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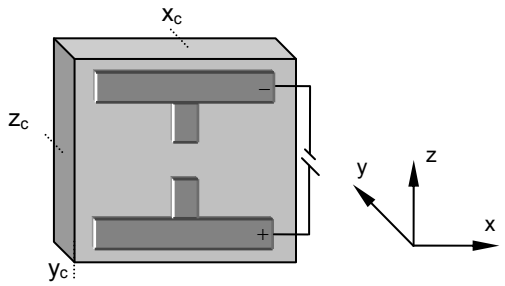
The conduction characteristics of semiconductor materials are influenced by the trap density, its capture cross sections and its energy levels in the bandgap (1). Gallium Arsenide semiconductors used in the fabrication of the high resistivity photoconductive semiconductor switches (PCSSs) for THz generation (2), can be either compensated semi-insulating material or low temperature grown. Both these materials have trap levels in the bandgap.

We report on the influence of the material parameters of the GaAs PCSS on the response of the THz emitter. The analysis is based on the simulation results from in-house codes and from commercially available simulation suites for semiconductor and electromagnetics studies. We also look into the PCSS material properties for high power THz applications. Structure dimensions were the same in the all simulation analysis.



GaAs PCSS for THz generation

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