

Abstract

Due to its extraordinary features and wide bandwidth (5.47 eV), diamond is a very promising material in the field of optoelectronics. By absorbing ultraviolet light, excited charge carriers - electrons and holes - are created in the diamond, which can create excitons due to mutual Coulomb interaction. For low temperatures and high concentrations of photoexcited carriers, carriers can condense into electron-hole droplets and form an electron-hole liquid.

The aim of this diploma thesis is to follow up with previous research at the department and to examine the dynamics of electron-hole liquid in bulk diamond at low temperatures. Using femtosecond laser spectroscopy, we investigate the influence of excitation wavelengths on the dynamics of electron-hole liquid condensation.