

Citation:

B.A. Ruzicka, L.K. Werake, H. Samassekou, and Hui Zhao, *Ambipolar diffusion of photo-excited carriers in bulk GaAs*, [Applied Physics Letters](#) 97, 262119 (2010)

Published version:

Published version: http://apl.aip.org/resource/1/applab/v97/i26/p262119_s1

Other sources:

ArXiv: <http://arxiv.org/abs/1102.1366>

Key words:

Materials Science

Abstract:

The ambipolar diffusion of carriers in bulk GaAs is studied by using an ultrafast pump-probe technique with a high spatial resolution. Carriers with a pointlike spatial profile are excited by a tightly focused pump laser pulse. The spatiotemporal dynamics of the carriers are monitored by a time-delayed and spatially scanned probe pulse. Ambipolar diffusion coefficients are deduced from linear fits to the expansion of the area of the profiles, and are found to decrease from about $170 \text{ cm}^2 \text{ s}^{-1}$ at 10 K to about $20 \text{ cm}^2 \text{ s}^{-1}$ at room temperature. Our results are consistent with those deduced from previously measured mobilities.