

Abstract Submitted
for the 4CF12 Meeting of
The American Physical Society

The optical properties of using graphene as a saturable absorber

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University of Colorado at Boulder — Graphene, a single-atom layer of carbon atoms in a honeycomb lattice, has been on the forefront of research since its discovery in 2005 [1]. Although it has many applications, my research is specialized in the field of utilizing the graphene as a saturable absorber for mode-locking lasers. Currently, the most common method to mode-lock a laser is by using a Semi-conductor Saturable Absorber Mirror (SESAM). Graphene is a substitute for SESAMs with pulse generation as low as 260 fs [2]. However, graphene will begin to “burn” as the laser approaches the intensity it needs to mode-lock. We have experimented with various methods of protecting the graphene from burning so it can be used at higher intensity domains.

[1] A. K. Geim, K. S. Novoselov, “The rise of graphene.” *Nat Mater.* 2007/03//print

[2] G. Acosta, J.S. Bunch, C.C. Lee, T.R. Schibli, “Ultra-Short Optical Pulse Generation with Single-Layer Graphene.” *Journal of Nonlinear Optical Physics and Materials*, Volume 19, Issue 04, pp. 767-771. 00/2010.

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Date submitted: 17 Oct 2012

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