

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Controlling Light with Light: Efficient Energy Transfer between Laser Beams by Stimulated Raman Scattering YOUBO ZHAO, TANA E. WITT, ROBERT J. GORDON, University of Illinois at Chicago — Efficient energy transfer between two intersecting ultrafast laser beams is reported. This effect is observed when the linearly polarized beams are focused in air and intersect at an acute angle. This phenomenon is attributed to plasma-mediated forward stimulated Raman scattering. Depletion of the pump beam increases with seed energy and is facilitated by supercontinua generated by both pulses. Pump depletion as high as 57% is observed. Amplification of the seed pulse depends on the polarization directions of the two lasers and the delay between the pulses. Interaction between the laser beams results also in pulse compression, rotation of the polarization plane, and spectral broadening of the seed laser.

Robert Gordon
University of Illinois at Chicago

Date submitted: 23 Jan 2009

Electronic form version 1.4