

## **Dielectric Laser Acceleration of Electrons**

*Joel England, SLAC National Accelerator Laboratory,  
Stanford University, California*

Acceleration of particles in laser-driven dielectric structures fabricated using semiconductor manufacturing techniques is a new and promising approach to developing future generations of ultra-compact particle accelerators, with recently demonstrated accelerating gradients up to an order of magnitude beyond those of conventional accelerators. We review the current state of experimental research in this area and present a conceptual layout for a wafer-scale device based on this approach. We examine one particularly promising near-term use for such accelerators in radiation oncology, and discuss energy scaling for high energy physics and basic energy science applications.