

NWS12-2012-020009

Abstract for an Invited Paper  
for the NWS12 Meeting of  
the American Physical Society

**Teaching Plasmonics, Scanning Probe Microscopy and Other Useful Experiments at the Upper Level**

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It is important to teach students concepts and experimental skills relating to modern research being performed today. Experiments that help educate students about the latest research helps them get jobs and into the doors at many great academic institutions. PSU's Advanced Experimental Class for physics undergraduates offers many novel experiments to help the students accomplish this task. Labs involving Plasmonics, thin film deposition, scanning probe microscopy (SPM) and more will be discussed. In addition, a new NSF funded project involving the building of a Do-It-Yourself (DIY) SPM will be discussed.