Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

**Hydrogen and Carbon Effects on Al2O3 Surface Phases and Metal Deposition** XIAO-GANG WANG, Delphi Research Labs, Shelby Twp., MI 48315, JOHN SMITH, Delphi Research Labs, Shelby Twp., MI 48315 — Effects of H and C impurities on $\alpha$-$Al_2O_3$ (0001) surface stability and metal wetting behavior are determined from first principles[1]. The *ab initio* surface phase diagram for H and C on the alumina surface reveals six distinct surface phases. These different surface phases exhibit a variety of adhesion strengths with Cu and Co, and correspondingly different wetting behaviors. These results are consistent with the varied wetting characteristics observed experimentally. [1] Xiao-Gang Wang and John R. Smith, Phys. Rev. B70, Rapid communications, 081401 (2004).

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Date submitted: 30 Nov 2004 Electronic form version 1.4