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**GISAXS Studies of Gold and Platinum Nanoparticles Formed by Atomic Cluster Deposition.** S. Vajda<sup>1,2</sup>, R.E. Winans<sup>1,3</sup>, G.E. Ballentine<sup>1</sup>, J.W. Elam<sup>4</sup>, B. Lee<sup>3</sup>, M.J. Pellin<sup>5</sup>, S. Seifert<sup>3</sup>, G.Y. Tikhonov<sup>1</sup>, N.A. Tomczyk<sup>1</sup>.  
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GISAXS is a powerful tool for the determination of the size and shape of nanoparticles dispersed on surfaces or embedded into thin films. It allows for real-time monitoring of the evolution of particle size and shape with temperature and to study the kinetics of particle aggregation under vacuum conditions or when exposed to reactive gases. We have used this technique for the characterization of sub-nm to several nm size platinum and gold particles produced by deposition of atomic metal clusters from molecular beams on technologically relevant oxide surfaces. These studies made it possible to monitor cluster isomerization, to follow aggregation of clusters into larger nanoparticles with various shapes, to identify cluster-support combinations for potential use e.g. in catalysis oriented research, as well as the characterization of ultrathin oxide films used as supports.

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