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Ordered Layers of Co Clusters On Boron-Nitride Template Layers AXEL ENDERS, University of Nebraska - Lincoln, JAE-SUNG KIM , Soonk-Myung Women's University, GEOFFREY ROJAS, XUMIN CHEN, University of Nebraska - Lincoln, JIAN ZHANG, Hebei University of Technology, JAN HONOLKA, Max Planck Institute for Solid State Research, RALPH SKOMSKI, University of Nebraska - Lincoln — The synthesis of highly ordered monolayers of metallic nanoclusters by a buffer-layer assisted growth (BLAG) route is introduced and investigated. The focus is on clusters of Co deposited onto mechanically stable, periodically corrugated boron-nitride layers by repeated BLAG cycles. The approach combines the advantages of well-established preparation methods for surface-supported clusters, namely the versatility of cluster deposition from the gas phase and the positional accuracy of the directed growth on template surfaces. The particle coverage and geometry are obtained from scanning tunneling microscopy experiments and analyzed with analytic models and by Monte-Carlo simulations. The model shows that the approach to full coverage is critically slowed down by attractive interparticle interaction, which results in the coalescence and growth of some of the clusters. The method represents a generic approach to fabricate ordered layers of clusters of virtually any metal.

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