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Synthesis and characterization of MgO and ZnO nanoparticle MARY ROSS, M. FARINELLI, S. CHINTA, University of Tennessee, D. BEACH, A. RONDINONE , Oak Ridge National Laboratory, JOHN LARESE, Oak Ridge National Laboratory, University of Tennessee — We will discuss recent synthetic, thermodynamic and electron microscopicy investigations that probe the topological, adsorption and chemical properties of MgO and ZnO nanometer sized particles. Using a novel, patented process we find that pure and doped particles of metal oxides can be produced in large quantities with well-defined crystal habitat. Our thermodynamic investigations indicate that at low temperatures several layering transitions of methane and hydrogen are easily observable. Our electron microscopy studies indicate that numerous shapes including cubes, rods, plates and tetrapods can be selectively produced. We will discuss the effectiveness of these materials as catalysts when small (20nm) sized metal clusters of Au and Pd are deposited. If time permits the optical properties of the ZnO materials will also be discussed.

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