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Synthesis of NiO/ZnO and Ni/ZnO nanocomposites and their field emission properties

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NiO/ZnO and Ni/ZnO nanocomposites have been synthesized by atomic layer deposition and H₂ thermal reduction. Vertically grown ZnO nanowires on Si substrates by vapor transport method were used as templates firstly to grow NiO layers. ALD method having excellent thickness controllability and uniformity on complex 3-dimensional substrates was employed to fabricate the NiO/ZnO core-shell nanowires and the Ni-ZnO nanoparticle-nanowire composites was achieved by the thermal reduction at H₂ ambient. The field emission properties of ZnO, Ni/ZnO, and NiO/ZnO nanostructures were compared.