

Supporting Information

Aluminum zinc oxide nanostructures with customized size and shape by non-aqueous synthesis†

S. Zellmer,^{a,‡} A. Kockmann,^{a,‡} I. Dosch,^a B. Temel,^a and G. Garnweitner^{a,*}

^a Institute for Particle Technology and Laboratory for Emerging Nanometrology, TU Braunschweig, Volkmaroder Str. 5, 38104 Braunschweig, Germany.

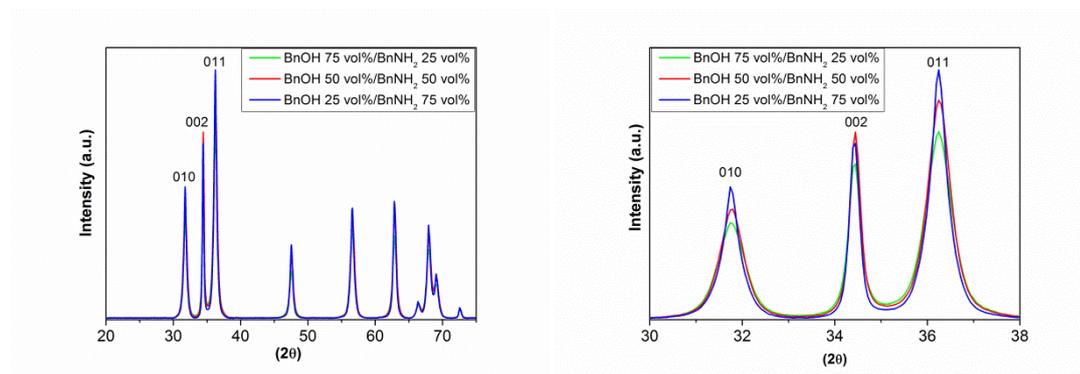


Figure S1: Influence of the solvent on the morphology of AZO nanocrystals – XRD patterns of the particles prepared in the solvent mixtures (BnOH and BnNH₂)

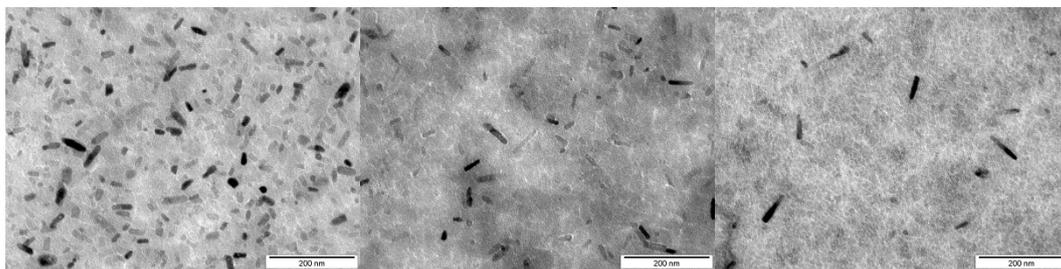


Figure S2: Influence of the solvent on the morphology of AZO nanocrystals – TEM images of the particles prepared in the solvent mixtures, from left to right 25 vol% BnOH/75 vol% BnNH₂, 50 vol% BnOH/50 vol% BnNH₂, 75 vol% BnOH/25 vol% BnNH₂ (BnOH and BnNH₂)

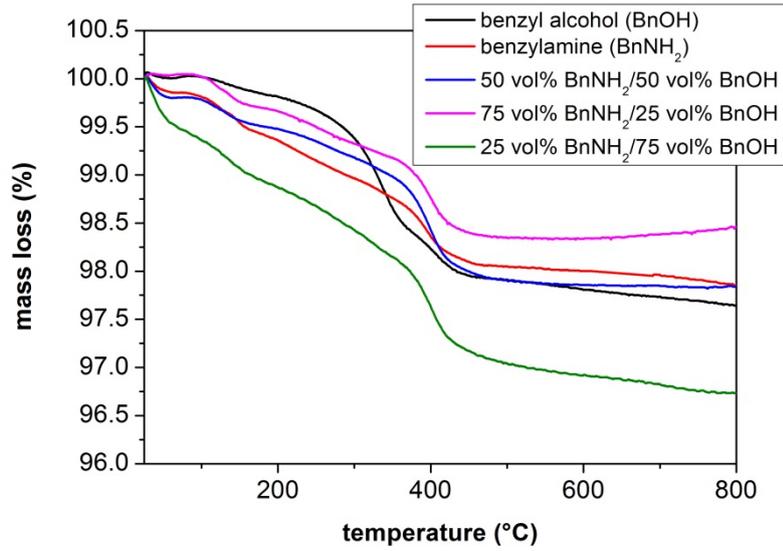


Figure S3: TGA thermograms of washed and dried products demonstrating the influence of the volume ratio of benzylamine/benzyl alcohol on the mass of bound organics at the particle surface (note: the larger weight loss of the sample from 25 vol% BnNH₂/75 vol % BnOH is essentially due to incomplete drying prior to the analysis, visible as larger weight loss at low temperatures)

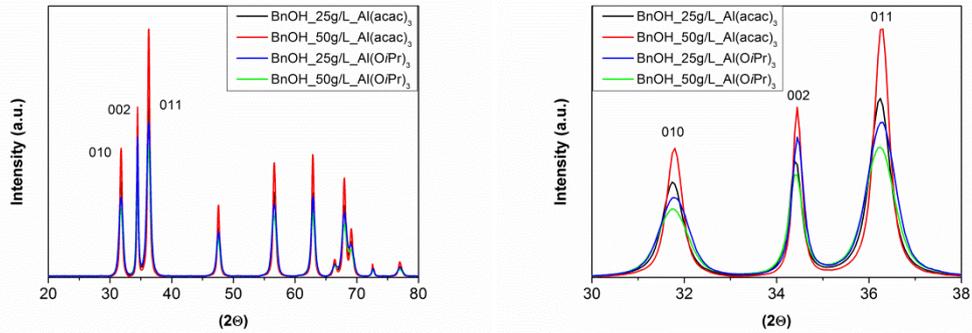


Figure S4: Influence of the Al precursor on the morphology of AZO nanocrystals synthesized in benzyl alcohol – XRD patterns

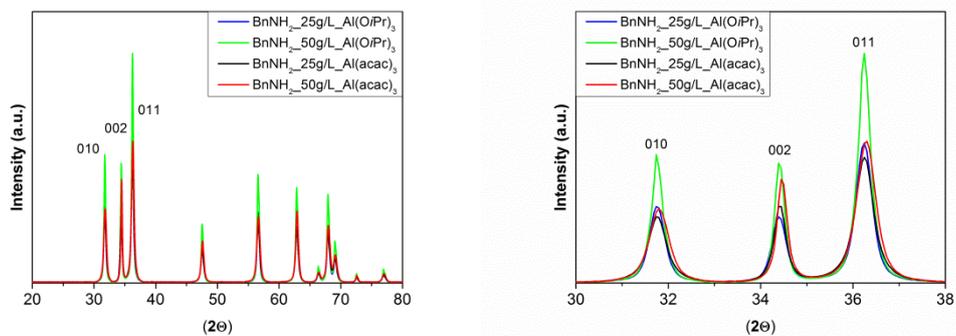


Figure S5: Influence of the Al precursor on the morphology of AZO nanocrystals synthesized in benzylamine – XRD patterns

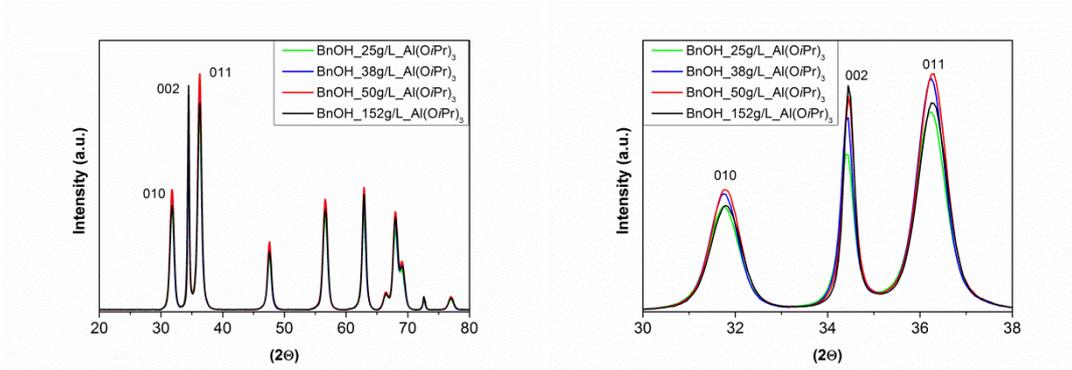


Figure S6: Influence of the precursor concentration of the crystallite size in benzyl alcohol – XRD patterns

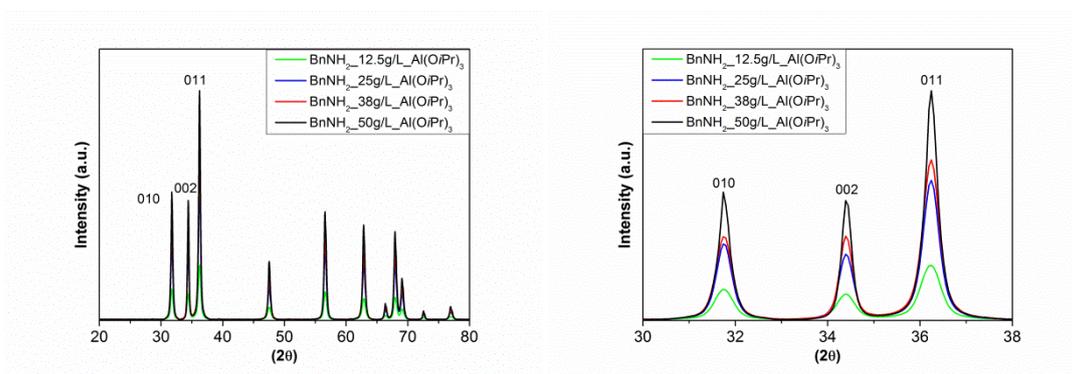


Figure S7: Influence of the precursor concentration of the crystallite size in benzylamine – XRD patterns

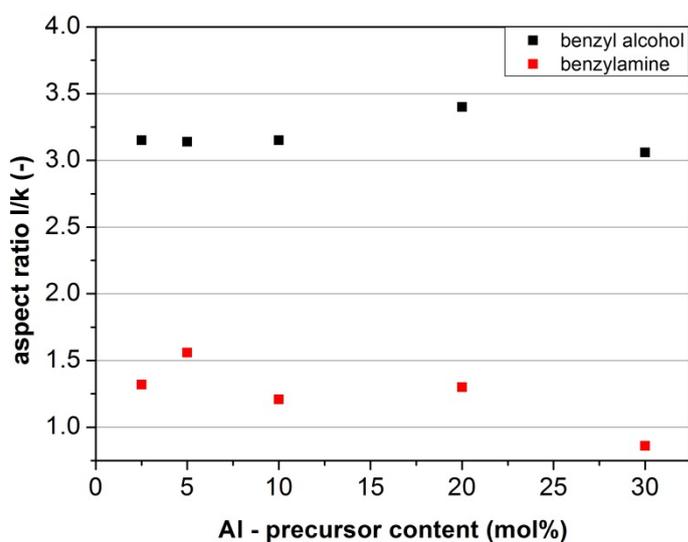


Figure S8: Influence of the Al content on the aspect ratio for AZO nanoparticles synthesized in benzylamine (spherical particles) and benzyl alcohol (rod-shaped particles)

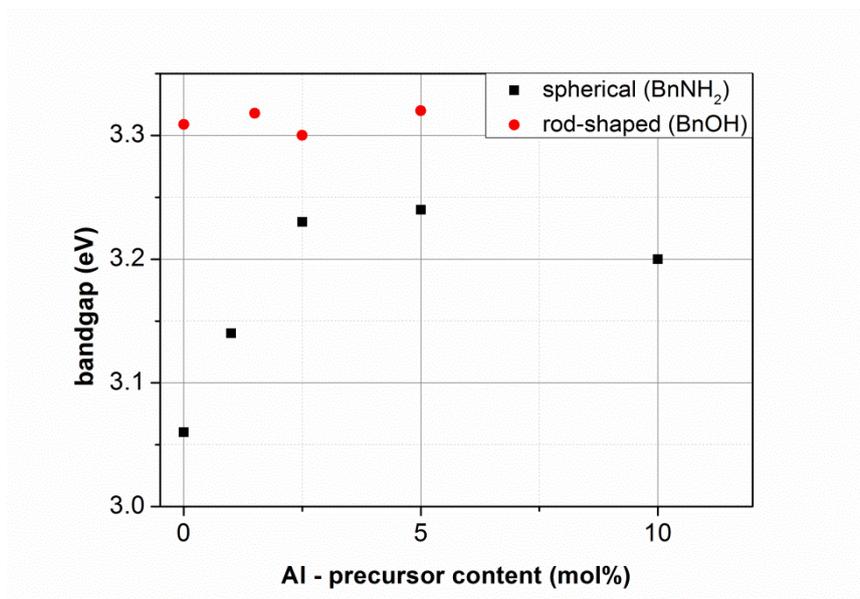


Figure S9: Bandgap energies of AZO nanospheres obtained in benzylamine and rod-shaped AZO nanoparticles synthesized in benzyl alcohol for different Al doping levels

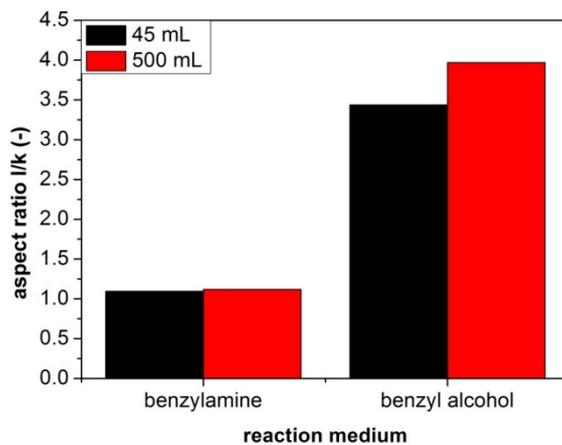


Figure S10: Influence of the scale on the aspect ratio of synthesized spherical and rod-shaped AZO nanoparticles (50 g/L, 2.5 mol% Al, 200 °C, 24 h)