

# Preparation of ZnO colloids by pyrolysis of $[MeZnO^iPr]_4$ in the presence of hexadecylamine and probing the surface chemistry of the nanoparticles by CO/CO<sub>2</sub> adsorption studies followed by FTIR<sup>†</sup>

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ZnO nanoparticles with an average diameter of 3.5 nm were prepared by employing a new thermolysis route where the presence of catalytic amounts of water was essential for the completion of the reaction. The use of HDA as the capping ligand provided particle solubility in a wide range of non-polar solvents. The material was characterized using HRTEM, UV-VIS, DLS and XRD. In order to evaluate it as a model for MeOH active catalyst support, gas adsorption studies monitored *in situ* with FTIR were successfully employed. The facile penetration of CO<sub>2</sub> molecules through the organic shell and their subsequent conversion to a CO<sub>3</sub><sup>2-</sup> species at the oxide surface is presented and discussed.