

Nitrogen-Containing Carbon Nanotubes As Solid Base Catalyst

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Silica-supported Ni and Co catalysts, for the growth of NCNT, with a metal loading of 20 wt% were prepared via Homogeneous Deposition Precipitation (HDP) using Ni-nitrate or Co-nitrate precursors as described before.^{1, 2} For NCNT growth 0.5 g of the calcined catalyst was loaded into a vertical quartz reactor and heated in He (100 mL•min⁻¹) to 973 K. Next, the catalyst was reduced at that temperature in 20% H₂/He (100 mL•min⁻¹) for 2 hours. Afterwards, the temperature of the reactor was adjusted to the desired temperature for NCNT growth (823-1123 K) while keeping the catalyst in He (50 mL•min⁻¹). Subsequently, a He gas stream saturated at 303 K with the desired hydrocarbon (acetonitrile or pyridine) was fed to the reactor. After 16 hours the growth reaction was terminated, the reactor was cooled to room temperature in He and the product, *i.e.* NCNT together with the growth catalyst, was collected. The raw product was refluxed in a 1 M potassium hydroxide solution for one hour to remove the silica and, after washing, refluxed in concentrated hydrochloric acid for two hours to remove the exposed metal.³ The NCNT were rinsed thoroughly with deionized water to remove all salt and traces of HCl, dried at 333 K and stored for further use.

References

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