



Showcasing research from Dr Esteban Gioria and Prof. Christian Damsgaard's laboratory, DTU Physics, Technical University of Denmark.

Colloidal Fe nanocrystals for CH_4 decomposition: role of the support

The nature of the support can drastically influence catalytic activity. In this work, carried out at the Department of Physics, Technical University of Denmark, E. Gioria and co-workers demonstrated how preformed Fe nanocrystals catalyse CH_4 decomposition into various carbon nanostructures. Among the supports tested, only MgAl_2O_4 enabled the formation of carbon nanotubes. MgO effectively anchored the Fe nanoparticles but encapsulating the Fe sites, SiO_2 led to significant sintering, and Si_3N_4 evidenced C_xN_y formation due to partial carburization of the support.

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See Esteban Gioria, Christian D. Damsgaard *et al.*, *J. Mater. Chem. A*, 2025, **13**, 27136.