

Nom du laboratoire : ITODYS

Nom de l'équipe : NanoCat

Prénom, nom du représentant de l'équipe : Jean-Yves Piquemal

Membres de l'équipe : François Chau, Miguel Comesáñ Herno, Marion Giraud, Jennifer Peron, Jean-Yves Piquemal, Lorette Sicard.

Site web du laboratoire : <https://www.itodys.univ-paris-diderot.fr/fr/>

Site web de l'équipe (si existant) : <https://sites.google.com/view/the-nanocat-team>

Institut : INC

Mots-clés : (Nano)materials, elaboration, formation mechanisms, thermocatalysis, photocatalysis, electrocatalysis.

Techniques utilisées: (en termes de synthèse, caractérisation, méthodes, de calculs.....)
polyol process, sol-gel method, spray-drying, XRD, SEM-FEG coupled to EDX, XPS, XAS (facility), XRD, Physi- and chemi-sorption, PEM electrolyzer.

Brève présentation des thématiques: (10 lignes maximum)

The research activities of the NanoCat team are devoted to the synthesis of inorganic functional materials with controlled compositions, crystal structures, textural properties, sizes and shapes. This includes the development of new synthetic methodologies, surface modification by ligands, studies of the reaction mechanisms and detailed (surface) characterization of the prepared materials. The goal is to design materials with improved performances mainly for applications in thermo-, photo-, electro-catalysis. The tight control over the morphological properties and surface functionalization of the nanocrystals obtained makes them ideal platforms for the evaluation of facet-dependent catalytic activity and selectivity.

5 publications représentatives : (si possible avec lien actif vers HAL ou éditeur)

R. Kumar Rammammoorthy, *One-Pot Seed-Mediated Growth of Co Nanoparticles by the Polyol Process: Unraveling the Heterogeneous Nucleation*, Nano Lett., **2019**, 19, 12, 9160–9169., <https://doi.org/10.1021/acs.nanolett.9b04584>

M. Elmaalouf et al., *The origin of the high electrochemical activity of pseudo-amorphous iridium oxides*, Nat. Commun., **2021**, 12, 1, 3935. <https://doi.org/10.1038/s41467-021-24181-x>

Y. Negrin-Montecelo et al., *Chiral Generation of Hot Carriers for Polarization-Sensitive Plasmonic Photocatalysis*, J. Am. Chem. Soc., **2022**, 144, 4, 1663, 1671. <https://doi.org/10.1021/jacs.1c10526>

B. Azeredo et al., *Co–Ru Nanoalloy Catalysts for the Acceptorless Dehydrogenation of Alcohols*, ACS Appl. Nano Mater., **2022**, 5, 4, 5733–5744. <https://doi.org/10.1021/acsanm.2c00764>

S. Patra et al., *UV-Visible photo-reactivity of permanently polarized inorganic nanotubes coupled to gold nanoparticles*, Nanoscale, **2023**, 15, 4101–4113. <https://doi.org/10.1039/D2NR05796D>