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Biography
Aline AUROUX

Aline Auroux is Emeritus CNRS research Director at the Institut de Recherches sur la Catalyse et l'Environnement de Lyon (IRCELYON, UMR 5256 CNRS-UCBLyon1), an academic laboratory belonging to the Centre National de la Recherche Scientifique (CNRS) of France. She was head of the group "Clean and Renewable Energies" of IRCELYON during 7 years.
She has published more than 365 articles in international journals (H-index=61. Citations=14000), 17 book chapters, editor of two book (Springer Ed and DeGruyter Ed) and guest editor of 3 reviews. She has been General Secretary of the French Chemical Society (SCF), she is currently Project manager in SCF, Chair of EuChemS Chemistry and Energy Division, President or member of french scientific commissions (Group Paris-Lyon, ASAP for children, ALCTMP, MINAPATH, CPP sud-est III, ACETC)
65 invited conferences, 178 oral communications, 370 posters.
Training of more than 95 PhD, Postdoc and Master students.
Numerous industrial, European (Inco-Copernicus, Eurobioref, Marie-Curie, PYROCO2) and national contracts (10 ANR projects).
Organization of 3 international congresses (CTEC) and 14 international summer schools.
Awards: Award "I.G. Murgulescu" of the Romanian Academy of Sciences (2003).
Award CALVET in calorimetry (2007).

Main research areas:
Catalysis, Catalytic processes, Synthesis of catalysts and nanoparticles, Oxides, Zeolites, Clean and renewable energies, Clean combustion of hydrocarbons, Hydrogen production and storage, Catalytic reforming, Fuel cells, Heat measurements, Calorimetry, Acid-base and redox properties of solids, Water and Air depollution, DeNOx, CO_2 capture and conversion, Biomass conversion, Biofuels, Interseasonal heat storage.
My main fields of research concern the determination of surface properties of solid catalysts such as the adsorption properties and the acid-base or redox character of the catalytic sites. The number, strength and strength distribution of the active sites of catalysts are determined by using adsorption calorimetry and differential scanning calorimetry linked to gas chromatography, thermogravimetry and mass spectrometry. Calorimetric experiments involving adsorption or desorption of various reactants under carefully controlled conditions are performed in order to establish the thermodynamics of transport, sorption or desorption. Scales of acidity/basicity in number and strength for numerous oxide and zeolite catalysts have been established both in gas phase and liquid phase.
As Head of the clean and renewable energies group of IRCELYON, I have been currently involved in the following **Research topics:**
- Catalysts synthesis including nanoparticles.
- Determination of the acid-base and redox properties of oxides, zeolites and metallic particles
- Catalysts for depollution processes (depollution of air and water):
  - deNOx mechanisms over supported oxides, investigation of poisoning effects.
  - Capture of gaseous pollutants and organic compounds. Depollution studies in gas phase and in liquid phase.
  - Boron nitride supported bimetallic catalysts for combustion of hydrocarbons.
- Hydrogen production and storage:
  - New catalytic materials for fuel cells (reforming of DME, DMM and methane)
  - Aluminium hydrides and borohydride compounds for hydrogen production and storage: Application to portable devices. Study of the kinetics and thermodynamics of reversible and irreversible catalyzed systems for H_2 production.

- Study of the poisoning of PEM Fuel Cell membranes

- Catalysts for biofuel production and biomass conversion (conversion of cellobiose, glucose, Guerbet alcohols, nitrilation of fatty acids and esters, conversion of bioalcohols in acrolein, …). Relationships are established between acid/base properties (as determined by adsorption calorimetry in liquid or gas phase and FTIR) and selectivity and conversion.
- Interseasonal heat storage: thermochemical storage in solid composites (including zeolites) and in saline aqueous solutions