CHEMICAL ENGINEERING

MUR DM 118 - In-operando spectroscopic analyzes and modeling tools applied to oxidation catalysts in the environmental field

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
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Context of the research activity	The in-situ and in-operando analyses of the activity of a catalyst can reveal phenomena which occur during the reaction on the surface of the catalyst and which, on the other hand, cannot be observed solely from the analysis of the reaction products. To this end, spectroscopic techniques in operando will be employed for the study of catalysts in the environment and energy sectors, such as through infrared and Raman spectroscopy. Progetto finanziato nell'ambito del PNRR - DM 118/2023, CUP E14D23001680006
Objectives	The candidate will engage in the development of catalysts for applications in the environmental and energy fields. These catalysts will be studied with classical characterization techniques (BET, TPDRO, XRD, FESEM, TEM, ICP, ...) but also through in-operando techniques, i.e. characterizing the material during the reaction for which the catalyst was designed . To this end, Raman and infrared spectroscopy will be employed, both in classical mode and in operando mode, by analyzing the surface of the catalyst and the reaction products under conditions very similar to those of the reaction (composition of reactant gases , temperature, pressure)
Skills and competencies for the development of the activity	The candidate should preferably exhibit skills in the field of synthesis and testing of catalysts, and their characterizations to obtain interpretative schemes of their functioning.