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Scientific summary

- Research activities: biomass valorization, process intensification, thermal safety of chemical process & calorimetry and kinetic modelling.
- Supervision: 3 post-doctoral theses, 15 doctoral theses (10 defended), 21 master and 24 bachelor theses
- Scientific communication: 83 articles, 1 book chapter, 1 Plenary lecture, 7 keynote lectures, 61 oral and 42 poster presentations in international symposium
- Awards: Best poster presentation at SFGP XIV; Bonus for scientific excellence *Prime d'encadrement doctoral et de recherche (PEDR)* (2013-2017 (B) ; 2017-2021 (A) ; 2021-2025 (A))

2015 “Habilitation à diriger des Recherches HDR” from “Université de Rouen” (France)

Process intensification Multiphase reactor system and multiple reactions

2009 Chemical Engineering doctor, a joint degree programme between Åbo Akademi University (Finland) & INSA of Rouen: Catalytic synthesis and decomposition of peroxycarboxylic acids.

I. Current position & responsibilities

Since September 2010: Associate-Professor *H.D.R* (“*Habilitation à Diriger des Recherches and Hors-Classe*”) at INSA

& **since February 2015:** Docent at Åbo Akademi in chemical process technology..

Administrative tasks and memberships in committees

2018-: In charge of the international office (INSA Rouen) for Europe

2018-: Representing INSA group for Research and Innovation at The European Consortium of Innovative Universities (ECIU). Involved in WP2 Research of the European University ECIU.

2018-: Co-animator of the working party “Promotion of chemical engineering” (SFGP)

2016-: Member of the scientific and technical committee of the French Chemical Engineering Society

2018-2022: Elected management board (*conseil d'administration*) of INSA Rouen

2012-2018: Curriculum designer at the Risk management department (INSA Rouen)

2014-2020: Member of the section EFCE Section on Sustainability

Editorial board members

-**Since April 2020,** Editorial Board Members for Processes (MDPI)

-**Since 2021,** Topic editor for Catalyst-MDPI in the section Catalytic Materials

-**2020** Guest-editors “Thermal Safety of Processes (Processes)” & “Catalytic Epoxidation (Catalyst)”.

-**Since 2019,** associate editor for Frontiers In Chemical Engineering

Reviewer in journal papers (publons.com/a/1391206/) (more than 200 reviewed articles)

II. Research activities

February 2022-February 2025: Rouen’s project PROMETEE (Processes to valoRize nOrman bioMass from renEwable energies: ciTizen scienceE and process safEty). Consortium: Aoues’s team (INSA Rouen) for the mechanical and civil engineering part, Liano’s team (Rouen university) for the citizen science part and Leveneur’s team for process safety. (Total budget : 120 k€).

Objectives: develop several chemical processes for the valorization of biomass, develop a probabilistic methodology to consider the new risk linked to these processes, evaluate the environmental impact of these processes and to develop a methodology to integrate citizen in the co-construction.

Responsibility: Principal investigator.

December 2021-December 2024: Normandy's region project ARBRE (Risk Analysis to processes valorizing 2nd generation biomass and using Renewable energies. Evaluated by French National Agency (ANR) and Normandy Continuum Earth See (CTM) and funded by Normandy's region. Consortium: Aoues's team (INSA Rouen) for the mechanical and civil engineering part, Diarrassouba's team (Le Havre university) for the logistic study (biomass transportation), Lefebvre's team (Le Havre university) for the prognostic and detection study, Maugé's team (CNRS Caen) for the catalyst development, Aubert's team (Rouen university) for the ecology impact and Leveneur's team for process safety. (Total budget : 574 k€)

Responsibility: Principal investigator.

January 2022-November 2022: French embassy project with Indonesia POTION (Production sûr de biocarburant aviation : une approche expérimentale et théorique). Collaboration with Dr. Mohammad Kemal Agusta CMD-QE Bandung Institute of Technology for DFT calculation (Total budget 3.5k€).

Responsibility: Principal investigator.

February 2021-April 2024: ANR-DFG project MUST: Microfluidics for Structure-reactivity relationships aided by Thermodynamics & kinetics. Collaboration project with Julien Legros (COBRA, Université de Rouen) and Christoph Held (Dortmund TU, Germany). Total budget: 600k€ including 3 PhD salaries. Responsibility: Principal investigator.

February 2021-February 2024: coordinator of the SMART-ER (ECIU European university, H2020) for INSA group (7 INSA in France). I represent INSA group, promote and communicate on this research project (budget 175 k€).

2020-2021: PHC Balaton "Numerical methods for the optimization and safe production of non-isocyanate polymers" with the Institute of Chemical and Process Engineering, University of Pannonia (Hungary). Principal investigator for the French side.

2019-2020: PHC Proteus "Process intensification in the production of 2nd generation platform molecules" with the Microprocess Engineering Research Group, University of Ljubljana (Slovenia).

Responsibility: Principal investigator for the French side.

2017-2018: PHC Galileo "Emergency response in second generation biomass valorization processes" in collaboration with the laboratory of Industrial Safety and Environmental Sustainability, Bologna University (Italy). Principal investigator for the French side.

Bilateral funding program for scientific cooperation between France and Finland project. "Biomass Valorization-Process Intensification-Risk assessment"

Collaboration: LSPC (Rouen), LRGP (Nancy), Lappeenranta university (Finland), Åbo Akademi (Finland), IFPen and VTT

Goal: Organization of a workshop 10-12th of September 2017

Responsibility: Principal investigator for the French side.

2016-2020: Member of the "Grand Réseau de Recherche MRT-Région Haute-Normandie"
Project: *Analyse Multidisciplinaire des Effets DOMINO*

Responsibility: In charge of the work package 2 (4 WP) "Green process: 2nd generation of biomass"

2013-2015: Member of Interreg IV A "Pilot Burner for CO₂ capture"

Laboratories consortium: CORIA, LCS, Cambridge, Brighton, Imperial college, LSPC

Responsibility: -participation to the development of a CO₂ capture pilot and CO₂ valorization simulation
-Post-doctoral fellow and master student supervision

-Organization of the Workshop "Utilization and valorization of CO₂ for green chemistry

Chemical reactor, Optic methods and Catalyst", 18th-20th of February 2015.

2011-2013: Epoxidized vegetable oils, a crucial intermediate for green bio-lubricant production

Finnish academy project (AKA) Responsibility: principal investigator

Project in collaboration with the laboratory of industrial chemistry (Abo akademi, Finland) to develop a safe and intensified process for the production of epoxidized vegetable oils.

III. Evaluator activities

Reviewer of project

- Coordinator of the main evaluation panel of the energy and sustainability research area for SMART-ER (ECIU university)
- Reviewer for Nation Science Centre Poland: SONATA BIS-11 proposals in 2022
- Reviewer for PRIN: *Progetti Di Ricerca Di Rilevante Interesse Nazionale*, Italian research project in 2021
- Reviewer for Senior post-doc positions University of Insubria – Italy in 2020
- External evaluator for ANR (French national research agency) in 2020 and 2021

As member of the faculty board, I evaluate applications for Hors-Classe

Reviewer of Habilitation

-Jean-François Portha “Approche multi-échelle en vue de l'optimisation de procédés impliquant des réacteurs catalytiques”, LRGC Nancy

Reviewer of Doctoral Thesis

- Zhengkun Jiang, « Stratégie numérique et expérimentale de recherche de procédés intensifiés en laboratoire », LRGP-Nancy, November 2019.
- Caroline Urmès, “Expérimentation et modélisation dynamiques de réacteurs catalytiques : vers une meilleure description du processus catalytique“, IRCELYon & IFPen (France), October 2018.
- Fateme Ebrahimi, Synthesis of peroxy-carboxylic acids in microreactor, Lappeenranta University of Technology (Finland), March 2012.
- Member of the jury to evaluate the doctoral thesis of the graduate school “Ecole Doctorale SPMII - Université de Rouen”, June 2015.

Individual PhD comity/Comité de suivi individuel

- Yamili MATEO ROSADO, supervised by I. Polaert (LSPC, INSA Rouen), June 2022.
- Louise Cottier, Caractérisation fine de l'influence de la viscoélasticité sur un processus d'atomisation, supervised by C. Dumouchel and M.-C. Renoult (CORIA, Rouen), June 2019.
- Zhengkun Jiang, Stratégie numérique et expérimentale de recherche de procédés intensifiés en laboratoire, supervised by J.-M. Commenge and J.-F. Portha (LRGP, Nancy), June 2017 & June 2018.
- Amine Dakoune, Analyse de la robustesse d'un procédé vert, supervised by Lionel Estel and Dimitri Lefebvre (LSPC, Rouen & GREAH, Le Havre), June 2017 & June 2018.

Scientific committee member of international conference

- International Congress of Applied Chemistry & Environment (ICACE-2), 30th October-1st November, 2020, Monastir, Tunisia.

Reviewer in International Conferences

- Reviewer of abstracts for the 5th International Congress on Catalysis for Biorefineries, CatBior V, 23-27 September 2019 - Turku/Åbo Finland
- Reviewer of abstracts for ICheaP 14 14th International Conference on Chemical and Process Engineering- 26-29 May, 2019 - Bologna, Italy
- Reviewer of abstracts for CISAP8 8th International Conference On Safety & Environment In Process & Power Industry- 12-14 September, 2018 - Milan, Italy
- Reviewer of abstracts for ISCRE 25, 25th International Conference on Chemical Reaction Engineering – 20-23 May 2018-Florence, Italy
- Reviewer of abstracts for International Conference on Safety & Environment in Process & Power Industry - 13-16 April 2014- Bologna, Italy
- Reviewer of abstracts for Congress on Catalysis Applied to Fine Chemicals June 16-19 2013 - Turku/Åbo Finland
- Reviewer of abstracts for ICheaP-10 8-11 May 2011 - Florence, Italy

IV. International collaborations

Abo akademi university (Finland), Ljubljana university (Slovenia), Chang'an University (Cina), Antioquia university (Columbia), Umea university (Sweden), Bologna university (Italy) Dortmund TU (Germany), University of Pannonia (Hungary).

V. Teaching activities

At INSA Rouen

- Mass transfer (26 hours/years) for bachelor students,
- Practical sessions (40 hours/years) of chemical engineering for master students,
- Heterogeneous catalyst (15 hours/years) for master students,
- Chemical reaction engineering 1 and 2 (60 hours/years) for master students
- Cost evaluation in chemical engineering (26 hours/years) to master students
- Non-ideal reactor (15 hours/years) for master students,
- Risk management (20 hours/years) for master students,
- Biofuel (26 hours/years) for master students
- Process simulation course (26 hours/years) for master students.

Abroad universities

Since the academic year 2012-2013, I go to Åbo Akademi university (Finland) every year to teach the thermal safety of chemical processes (Fundamental of Thermal Process Safety, Assessment of Thermal Risks, Experimental Techniques) for 8 hours.

During the academic years 2014-2015, 2017-2018, 2019-2020 and 2020-2021 courses on chemical reaction engineering for 26 hours at Universidad Autónoma de Santo Domingo (Dominican Republic).

During the academic years 2019-2020, I gave a course of thermal safety of chemical processes for 20 hours at Chang'An University (Xi'An, China).