



## Rachid Brahmi's Curriculum Vitae (updated 06/01/2024)

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Laboratory of Coordination and Analytical Chemistry (LCCA)

### PERSONAL DETAILS

Date of birth: 9<sup>th</sup> of January 1962

Marital status: Married, 3 children

Nationality: Moroccan

### TEACHING EXPERIENCE

Teaching of the following topics from BSc to Post-graduate students.

- General, Analytical and Inorganic chemistry (BSc level).
- Inorganic Chemistry: solid state chemistry, chemistry of the elements.
- Advanced topics: heterogeneous catalysis, catalyst preparation, Catalytic waste water treatment, XRD, AAS, BET-Porosity, TGA-DTA, TEM, SEM. (M.Sc. & post-graduate level).

### RESEARCH EXCHANGE AND VISITS

- 2010, 2011, 2012 and 2013: 1 to 2 month/year visit of Laboratory of Mass and Heat Transfer Process, University of Oulu, Finland, prof. Keiski Riitta
- April-May 2012, Dalian Institute of Chemistry Physics, *Chinese Academy of Sciences, Professor Tao Zhang. (Dalian China).*
- February 2009: Institute of Process Fundamentals, Czech Academy of Science, Prague, Czech Republic, Dr. Kvieta Jiratova
- July 2008: Advanced Institute of Science and Technology, Daejeon, South Korea, Professor Sejin Kwon
- 2004-2014: Laboratory of Catalysis in Organic Chemistry (LACCO)- UMR6503, Prof. Charles Kappenstein and Dr D. Duprez (6-7 months / year)
- May 2007: Laboratory of Catalysis, University of Science and Technology of Telemcen, Algeria, Professor Choukchou-Braham Abderrahim.

### RESEARCH INTERESTS

- **Heterogeneous Catalysis** (1989-present)
  - Preparation of methanolization catalysts Cu-ZnO-Al<sub>2</sub>O<sub>3</sub>; oxidation catalysts MnO<sub>x</sub>, CuO, Ag, Pt, Ir on Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, V<sub>2</sub>O<sub>5</sub>; SiO<sub>2</sub>; alumina transformations.
  - Synthesis of oxides by sol-gel procedure, supercritical drying, xerogels, aerogels, thermal stability.
  - Development of new catalyst formulations of waste water treatment (CWAO process): Pt, Rh/Ce<sub>x</sub>Zr<sub>1-x</sub>O<sub>2</sub>/monolith (collaboration with LACCO-Poitiers-France)
  - Development of new catalyst formulations for abatement of volatile organic compounds: different active phases and different carriers (collaboration with MHTP-Oulu-Finland and UCCS-Lille-France)
  - Development of new shaped catalysts: monoliths, foams, pellets, grains.
  - Characterization of catalytic materials: X-ray diffraction, physisorption, chemisorption, IR and Raman spectroscopy, Temperature programmed reduction, TEM, SEM,
  - Evaluation of catalyst performances (model reactions or test reactions)
  - Valorization of bio-waste (production of hydrogen from biogas, activated carbon and hydrochar by HTC,...)
- **Application of Catalysis to Propulsion** (2004-2017),



(Contracts with French Space Agency CNES, European Space Agency ESA, AIT-Austria, Onera,...)

- Development of monolithic-based catalysts for hydrogen peroxide decomposition.
- Development of new ionic liquid-based monopropellants and associate shaped catalysts.
- Development of shaped catalysts for decomposition of cryogenic mixtures ( $H_2+O_2$ )
- Several projects related to propulsion has been classified as confidential.

### **SUPERVISION OF THESES**

- MSc Theses: 30 completed since 1998.
  - PhD Theses: Supervision of 13 completed PhD, 5 underway.
- (3 double agreement with university of Oulu-Finland, 2 double agreement with university of Poitiers-France).

### **PUBLICATIONS, COMMUNICATIONS AND LECTURES**

- Around 80 papers published in refereed journals, 2 book chapters, around 25 conference proceedings and papers published in non-refereed journals.
- 5 invited lectures (Finland, South Korea, Algeria, China), more than 45 communications at international conferences.
- Reviewer of different international journals: Journal of Power and Propulsion, Materials Research Innovations, Aerospace Science & Technology, Applied Catalysis B: Environmental. Catalysis science and technology, Applied Catalysis A: General, Journal of Material Cycles and Waste Management, Journal of Materials and Environmental Sciences, Industrial & Engineering Chemistry Research, Catalysis Science & Technology..
- expert evaluator for the National Center of Scientific and Technical Research of Morocco (CNRST).
- h-index: 20

### **RESEARCH PROJECTS RESPONSABILITY**

**1. European Projet FP7:** Moroccan Coordinator NO-WASTE (2013-2017). Marie Curie IRSES – funded project for staff exchange start 1<sup>st</sup> April, 2013 (FP7). The collaboration is done with 6 international partners: University of Oulu (Finlande), University of Poitiers (France), Trier University of Applied Science (Allemagne), Federal University of Applied Sciences, Goiania (Brésil), University of Chouaib Doukkali (Maroc), Dalian Institute of Chemical Physics (Chine).

**2. Finland-France-Marocco :** Moroccan Coordinator of ‘Volubilis’ Projet, 2011-2015, (réf. MA/11/247). Title: Développement de catalyseurs spécifiques pour l’abattement des Composés Organiques Volatils Chlorés.

**5. France-Marocco :** Moroccan Coordinator of ‘Volubilis’ project, 2006-2010, Title: Développement de nouveaux matériaux catalytiques à bas de phosphates purs ou modifiés. Etude de leur application dans la désulfuration du gasoil, thiolation des alcools et la synthèse de l’acide sulfurique.

**7. Marocco-Finland : HYMEPRO** Hybrid Membrane Process for Water Treatment (2011-2014). Tekes (National Technology Agency of Finland) funded project including 2 national (Finnish) and 3 international full research partners. Collaboration done in addition with 7 other foreign universities. 12 industrial partners.

**8. Marocco-Finlande. AOPI** Advanced Oxidation Processes in Industrial Waste Water Treatment (2012-2016). Academy of Finland funded project including 3 national (Finnish) partners and 4 international partners. No industrial partners.

**9. Marocco-Finlande.** Moroccan Coordinator of 3 ERASMUS+ programs between University of El Jadida and University of Oulu-Finland (2015-2022).



**9- Coordinator** of exchange program between University of Oulu (Finland) and University of El Jadida (Morocco).

**10.** Leader of the R&D project “Autour des phosphates”, funded by the OCP foundation (2017-2019).

**11.** Deputy Director and head of the Catalysis and Environment axis within the LCCA Laboratory.