



HAL
open science

Editorial

Jean-Louis Paillaud, Hermann Gies

► **To cite this version:**

Jean-Louis Paillaud, Hermann Gies. Editorial. *Microporous and Mesoporous Materials*, 2019, 291, pp.109706. 10.1016/j.micromeso.2019.109706 . hal-02389025

HAL Id: hal-02389025

<https://hal.science/hal-02389025>

Submitted on 23 Dec 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Editorial

Jean-Louis Paillaud^{a,b,*}, Hermann Gies^{c,*}

^a *Université de Haute-Alsace, Axe Matériaux à Porosité Contrôlée, Institut de Science des Matériaux de Mulhouse UMR 7361, ENSCMu, 3bis Rue Alfred Werner, 68093, Mulhouse, France*

^b *Université de Strasbourg, 67000, Strasbourg, France*

^c *Institute of Geology, Mineralogy and Geophysics, University of Bochum, Bochum, Germany*

* Corresponding author. Université de Haute-Alsace, Axe Matériaux à Porosité Contrôlée, Institut de Science des Matériaux de Mulhouse UMR 7361, ENSCMu, 3bis rue Alfred Werner, 68093, Mulhouse, France.

E-mail addresses: jean-louis.paillaud@uha.fr (J.-L. Paillaud), Hermann.Gies@ruhr-uni-bochum.de, hermann.gies@rub.de (H. Gies).

To cite this editorial: DOI : [10.1016/j.micromeso.2019.109706](https://doi.org/10.1016/j.micromeso.2019.109706), HAL : [hal-02389025](https://hal.archives-ouvertes.fr/hal-02389025).

Available online 6 September 2019

In December 2018, Joël Patarin retired from his position as Director of Research at the CNRS where he worked in the group “Controlled Porosity materials” of “The Mulhouse Materials Science Institute (IS2M)” for more than 30 years in the field of traditional zeolites and related materials, including their applications. We dedicate this special issue of Microporous and Mesoporous Materials to Joël on this occasion.

Joël Patarin was born in Niort on Tuesday, the 29th of May 1956. Niort is a city located in the west of France, in the Poitou-Charentes region on the border of Vendée. After having passed his A-level exams, he joined the University of Nantes to follow a scientific cursus up to a Master's degree in chemistry. In order to finance his studies, he had to work as a supervisor in high schools at the same time. Then, between 1982 and 1985, he prepared a first PhD thesis entitled “Potassium octatitanate and its counterparts. Transport and incommensurability, fibrous texture and applications” under the supervision of Michel Tournoux and René Marchand in one of the three laboratories that formed the famous Nantes Institute of Materials (IMN) in 1988 under the leadership of Professor Jean Rouxel. During this period, he acquired an excellent knowledge in solid-state chemistry and used a wide variety of techniques: X-ray diffraction, electron microscopy, magnetic and electrical measurements, Mössbauer spectroscopy and EPR.



Photo IS2M

Immediately after this thesis, he joined the “Mineral Materials Laboratory” (LMM) as a CNRS researcher in Mulhouse under the leaderships of Raymond Wey, Jean-Louis Guth and Henri Kessler. Here, he changed his research theme by preparing a new doctoral thesis that focused on the synthesis of ferrisilicate zeolites of topology MFI. He was the first to use the hydrothermal route in fluoride medium to prepare these zeolites, which allowed him to modulate the distribution of iron in the crystals, outside/core, leading to different catalytic properties. To highlight the incorporation of the iron element in the framework, Joël used again many complementary techniques: Mössbauer spectroscopy, RPE, UV-visible reflectance and X-ray absorption spectroscopy (XANES and EXAFS). In particular, he carried out a very important work of exploiting the X-absorption data to establish a model of the iron environment, both in the “as-made” and calcined samples. While working on his doctoral thesis, he also addressed the study of the interaction between the silicic framework of MFI-type zeolites and occluded tetra-, tri- and dipropylammonium cations. Thus, he determined the thermodynamic quantities (Δ_r , H° , C_p , ...) by dissolution calorimetry in aqueous solutions of HF and deduced important information on the effect of these organic cations.

After his second thesis, he demonstrated his open-mindedness by asking to be detached from the CNRS for one year in order to work for the Research Center Elf Antar France in Solaize. Here, he was able to learn about catalytic cracking techniques and gained some experience in catalysis. Back at the Laboratory of Mineral Materials, he focussed his research activities on three main fields of research.

First, he was interested in the study of the properties of zeolites as acid catalysts. In order to do so, he transferred the expertise acquired during his year at Solaize. He was especially interested in the catalytic potentialities of zeolites of the Faujasite family (FAU-type and hexagonal EMT-type phases) which have been synthesized earlier by the Mineral Materials Laboratory in the presence of crown ethers. These two solids were the subject of a BRITE European contract (1992–1996) with the aim to determine their industrial potential in cracking catalysis or hydrocracking of petroleum distillation residues. In this context, Joël was responsible for two PhD students from the University of Haute Alsace together with Jean-Louis Guth.

Moreover, Joël made an important contribution to the fluoride synthesis and characterization of crystallized microporous gallophosphates. Thus, he determined the crystalline structure of the LTA-type gallophosphate by the Rietveld method in collaboration with Christian Baerlocher in Zürich. He concentrated on the study of the thermal stability of the cloverite gallophosphate, also previously obtained by the Laboratory of Mineral Materials in fluoride medium.

Furthermore, his experience in the determination of crystalline structures, whether on powders or on single crystals, enabled him to contribute significantly to the knowledge of aluminophosphates and microporous zincophosphates. With the help of post-doctoral trainees, he synthesized several new phases in these two families. Thereupon, he determined the crystal structures, particularly

in collaboration with the Institute of Mineralogy of Bochum under a Franco-German Procope contract.

In 1995, after ten years of very successful research, he obtained the accreditation to direct research (HDR) and became a Director of Research at the CNRS in October 1997. After the retirement of Jean- Louis Guth and Henri Kessler in 1996 and 1999 respectively, he became the director of the laboratory, the name of which he changed into "Controlled Porosity Materials Laboratory" (LMPC) in January 2005. He remained director until 2009, when the LMPC and two other research laboratories of Mulhouse were fused into "The Mulhouse Materials Science Institute (IS2M)". At the time, all the members of the LMPC laboratory integrated the axis "Controlled Porosity materials" of IS2M.

The scientific environment in Mulhouse always emphasized a generalist's approach combining synthesis and synthesis strategies, the characterization of materials including their crystal structure and atomistic order, and, finally, their application in catalysis, physical and mechanical applications. During the last 15 years of his leadership, Joël made the laboratory into one of the leading institutions in this field.

There are numerous highlights among his more than 300 refereed contributions, including numerous patents. Some of these were the fruit of collaborations with other academic laboratories and industrial partners to combine skills, but many others were the result of the research work of the talented staff of the Mulhouse laboratory. The selection of contributions is the choice of the editors, however, it also reflects the impact it makes on a specific community.

There is one field of applied fundamental research, which is engraved in our memories as related to Joël and his group and that is the hydrophobic hydration of porous all-silica materials and their use as springs, shock absorbers and bumpers. Afterwards, this remarkable property was extended to porous metal coordination polymers, such as MOFs and ZIFs. Over the years, numerous samples have been studied, the structure-property relation has been investigated and finally, theoretical explanations have been found. As typical for the application of porous materials, a number of side effects had to be investigated in addition, e.g. the nature of structural defects, the compressibility of the materials, etc. ...

We will always remember Joël's vital, joyful and positive personality with an exorbitant interest in zeolite research. We now wish him to enjoy this new period of his life, which will remain connected to some extent to zeolites. Indeed, he is one of the founding members of Zephir Alsace SAS, a little company that designs, manufactures and markets synthetic porous mineral materials from the extended family of zeolites.

To celebrate Joël's retirement, we invited several scientists who collaborated with him to contribute to this special issue. We sincerely thank all of them for their valuable manuscripts that make it a praiseworthy present. Our thanks also go to Wolfgang Schmidt, Editor-in-Chief of Microporous and Mesoporous Materials as well as to Elsevier for their support.