

Maude FERRARI

Researcher engineer

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NMR technics for Engineering Science

Research

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- Current Research Interests:

- Characterization of the phenomena of transport in porous media by Nuclear Magnetic Resonance (NMR) and Imaging of Magnetic Resonance (IMR) : *NMR, IRM, porous media, Poiseuille flow, non newtonian fluids, dispersion, velocity.*
- Flow of non-Newtonian fluid studied by MRI velocimetry: Wall slip effect and rheology : *IRM, NMR, yield stress fluid, fibers suspension, Couette geometry, rheometer.*
- Measurements, detection and transport of water in clays: NMR, methodology, relaxation times, nutation experiments
- Study of water profiles in membranes: methodology, instrumentation

Career

- Initial training

2005-2008 : PhD- Méthodologie RMN-Université Henri Poincaré (UHP), Nancy
Fundamentals of pulsed nitrogen-14 NQR - Experimental verifications

- Main career elements

2009-2011 : Post-Doc - Laboratoire réaction et Génie des Procédés (LRGP), Nancy
Study of the destruction of the combat by pyrolysis gas
Development of kinetic models of combustion of alkyl cyclohexanes

2012-present : Researcher engineer - LEMTA - Université de Lorraine
Manager of the platform of MRI - NMR at high resolution

Scientific and professional collaboration

- IFP Energies Nouvelles
- Laboratoire Navier (Ecole des Ponts-CNRS-IFSTTAR)

List of publications

Recent archival journal publications

- Study of Dispersion in Porous Media by Pulsed Field Gradient NMR: Influence of the Fluid Rheology.

Maude Ferrari, Christian Moyne, Didier Stemmelen.
Transport in Porous Media, (2018), in press.

- Membrane contactors for process intensification of gas absorption into physical solvents: Impact of dean vortices.

Lizeth Deisy, Cecile Lemaitre, Christophe Castel, **Maude Ferrari**, *et al.*.
Journal of Membrane Science, (2017), 530, pp.20-32.

- Study of dispersion by NMR: comparison between NMR measurements and stochastic simulation

M. Ferrari, J-P. Mérel, S. Leclerc, C. Moyne, D. Stemmelen
Diffusion-fundamentals.org 18 (2013) 11, pp 1-4

Reference publications for the post-doc

- New experimental evidence and modeling study of the ethylbenzene oxidation
Benoit Husson, **Maude Ferrari**, Olivier Herbinet, Syed S. Ahmed, Tidjani Niass, Pierre-Alexandre Glaude, Frédérique Battin-Leclerc
Proc. Combust. Inst. (2012)

- Low temperature oxidation of benzene and toluene in mixture with n-decane
Olivier Herbinet, Benoit Husson, **Maude Ferrari**, Sarah Bax, Pierre-Alexandre Glaude, Frédérique Battin-Leclerc
Proc. Combust. Inst. (2012)

- Experimental and modeling study of the oxidation of n-butylbenzene
B. Husson, R.Bounaceur, K.Tanaka, **M.Ferrari**, O.Herbinet, PA Glaude, R.Fournet, F. Battin-Leclerc, M.Crochet, G.Vanhove, R.Minetti, S.A.Syed
Comb.Flame. 159(2012)1399-1416

- Quantum Chemical Study of the Thermochemical Properties of Organophosphorous Compounds
Khalfa, Adil; **Ferrari, Maude**; Fournet, René; Sirjean, Baptiste; Verdier, Laurent; Glaude, Pierre-Alexandre
J. Phys. Chem. A, (2015), 119 (42), pp 10527-10539

Reference publications for the thesis

- Fundamentals of pulsed nitrogen-14 quadrupole resonance.
D. Canet, **M.Ferrari**.
J. Fraissard and O. Lapina (eds.), Explosives Detection Using Magnetic and Nuclear 1 Resonance Techniques, Springer Science+Business Media B.V. (2009) 1-30
- ¹⁴N Nuclear Quadrupole Resonance. 4. Two-pulse sequences for the determination of T₁ and T₂ relaxation times.
M.Ferrari, D. Canet
Mol. Phys 107 (2009) 2419-2430
- New perspectives in the PAW/GIPAW (Gauge Including Projected Augmented Wave) approach: JP-O-Si coupling constants, antisymmetric parts of shift tensors and NQR predictions.
C. Bonhomme, C. Gervais, C.Coelho, F.Pourpoint, T.Azaïs, L.Bonhomme-Courya, F.Babonneau., G.Jacob, **M.Ferrari**, D.Canet, J.R.Yates, C.J.Pickard, S.A.Joyce, F.Mauri and D.Massiot,
Mag. Res. Chem. 48(2009) 86-102
- Nitrogen-14 Nuclear Quadrupole Resonance (NQR) : dramatic sensitivity enhancement by large and fast temperature lowering.
D. Canet, **M. Ferrari**, A. Retournard
J. Magn. Res., 188 (2007) 275-278
- A fully homemade ¹⁴N Quadrupole Resonance Spectrometer.
N.Hiblot, B. Cordier, **M.Ferrari**, A. Retournard, D. Grandclaude, J. Bedet, S. Leclerc, D. Canet,
C. R. Chimie 11 (2007) 568-579
- ¹⁴N Nuclear Quadrupole Resonance. 3. Effect of a pulse train. Optimal conditions for data averaging.
M. Ferrari , N. Hiblot, A. Retournard, D. Canet,
Mol. Phys., 105 (2007) 3005-3012
- ¹⁴N Pulsed Nuclear Quadrupole Resonance 2. Effect of a single radio-frequency pulse in the general case.
D. Canet, L. Merlat, B.Cordier, D. Grandclaude, A. Retournard, **M. Ferrari**,
Mol. Phys., 104 (2006)1391