

Curriculum Vitae

Matthieu Viot

42 yo, married, 2 children

Researcher at CEA Marcoule

Institute for Separation Chemistry in Marcoule

ICSM UMR 5257 – CEA CNRS UM ENSCM

Lab. for Sonochemistry in Complex Fluids

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Education

2023 **Habilitation** à diriger des Recherches (HDR), university of Montpellier

2006 – 2009 **Ph.D.** Chemistry, university of Avignon

2004 – 2006 **Master** Degree in organic chemistry, universities of Avignon and Marseille

Research Activities

Since 2012 **CEA Researcher**, Institute for Separation Chemistry in Marcoule (ICSM)
Lab. for Sonochemistry in Complex Fluids (LSFC)

Fundamental studies about the chemical and sonochemical reaction mechanisms observed in homogeneous solutions and heterogeneous solid/liquid systems in relation with the current and future nuclear fuel cycle

- Preparation and characterization of actinide colloids and nanomaterials
- Redox behaviour of actinides mainly (U, Th, Pu) in aqueous solution
- Sonochemical dissolution of oxides for the nuclear fuel cycle or the recycling of strategic metals from catalysts in mild conditions
- Decontamination and structuration of extended metallic surfaces under ultrasound irradiation
- Experiments with strongly radioactive elements in glove boxes
- Experiments on synchrotron facilities

2010 – 2012 **Post-doctoral fellowship**, Institute for Separation Chemistry in Marcoule (ICSM)

- Catalytic dissolution of lanthanide oxides under ultrasound irradiation
- Effect of the acoustic cavitation on extended oxide surfaces

2009 – 2010 **Post-doctoral fellowship**, Max Planck Institute (MPIKG), Potsdam, Germany

- Acoustic cavitation on extended glass surfaces

2006 – 2009 **PhD Chemistry**, UMRA408 INRA University of Avignon

- Ultrasound- and Microwave-assisted extraction of compounds of interest

Research supervision

6 **PhD** thesis, 2 **post-doctoral** researchers, 13 **students** from Licence to Master degrees

Scientific Dissemination

h-index : 16 – **i₁₀ index** : 20

ORCID ID 0002-6295-2555; **WoS Researcher ID** J-2715-2017; **ID HAL** 343344

- **1 patent**
- **2 literature reviews** and **1 book chapter**
- **>30 publications** in peer-reviewed articles
- **>25 oral communications** (national or international)
- **>5 invited conferences** or seminars
- **Best poster prize:** 9th International Conference on *f*-elements Oxford, UK, 2015

Organisation of scientific events

2023	Nuclear Fuel Cycle: A Chemistry Conference (NFC3) , webinar in preparation
2022	Plutonium Futures : The Science , Nîmes (> 250 attendees)
2021	Nuclear Fuel Cycle: A Chemistry Conference (NFC3) , webinar (> 250 attendees)
2019	Ultrasound and processes workshop (J-SUP) , Orange, (> 75 attendees)
2014	14th meeting of the European Society of Sonochemistry , Avignon (>180 attendees)

Institutional and administrative responsibilities

Since 2022	Secretary of the French subdivision CRRC (“Chimie sous Rayonnement et Radiochimie”) of the French Society of Chemistry (SCF)
Since 2021	Elected Member representing ISEC on the CEA/DES management board Elected Member representing ICSM on the ISEC unit council First-aid attendant at work (SST) ; local first-aid team (ELPS)
Since 2012	Elected Member at the ICSM laboratory council
2021	Chairman , « environnement » session of « Journées des Actinides » (Mars 2021) Co-chairman , « actinide chemistry » session NFC3 conference (2021)
Since 2019	CEA Expert in chemistry & chemical engineering, specialty physical chemistry
Since 2012	Regular Reviewer: Ultrason Sonochem, Nanoscale, J Am Chem Soc, Chem Eur J...

Fundings

Principal investigator of several **collaborative projects** (Bottom-up, PTC, NEEDS), for the funding of **PhD thesis** (CEA projects) or for the access of **synchrotron shifts** and **European laboratories**.

Selected Publications

- Synthesis and Multi-scale Properties of PuO₂ Nanoparticles: Recent Advances and Open Questions. **M. Viro**t,* T. Dumas, M. Cot-Auriol, P. Moisy, S. I. Nikitenko. *Nanoscale Advances*, 4 (2022) 4938-4971
- First observation of [Pu₆(OH)₄O₄]¹²⁺ cluster during the hydrolytic formation of PuO₂ nanoparticles using H/D kinetic isotope effect. M. Cot-Auriol, **M. Viro**t,* T. Dumas, O. Diat, D. Menut, P. Moisy, S. I. Nikitenko. *Chemical Communications* 58 (2022) 13147-13150
- Ultrasonically controlled synthesis of UO_{2+x} colloidal nanoparticles. Cot-Auriol, **M. Viro**t,* T. Dumas, O. Diat, D. Menut, P. Moisy, S. I. Nikitenko. *Dalton Transactions* 52 (2023) 2135-2144
- Sonochemical Decontamination of Magnesium and Magnesium-Zirconium Alloys in Mild Conditions R. Ji, **M. Viro**t,* R. Pflieger, S. I. Nikitenko. *Journal of Hazardous Materials* 406 (2021) 124734, 1-14
- Relevance of formation conditions to the size, morphology and local structure of intrinsic plutonium colloids. C. Micheau, **M. Viro**t,* S. Dourdain, T. Dumas, D. Menut, P. L. Solari, L. Venault, O. Diat, P. Moisy, S. I. Nikitenko. *Environmental Science: Nano* 7 (2020) 2252-2266