

Clément Falaise

Chargé de recherche CNRS

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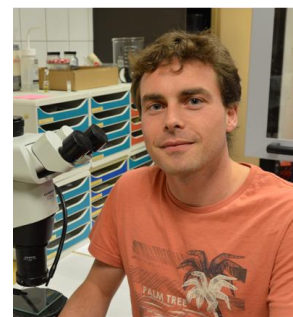
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Diplômes

2014 : Doctorat de Chimie (mention très honorable) ; Université de Lille 1, France

2011 : Master en chimie du solide et des matériaux (mention bien) ; Université de Rennes 1, France

2009 : Licence de chimie/physique des matériaux (mention bien) ; Université de Rennes 1, France

2008 : DUT Mesures Physiques ; IUT de Lannion, France

Expérience en Recherche

Depuis octobre 2017 : Chargé de recherche CNRS dans l'équipe « Molécules Interactions et Matériaux » à l'Institut Lavoisier de Versailles (UMR 8180)

Projet de recherche : « Polyoxométallates & Clusters : une association prometteuse pour l'élaboration de dispositifs photo-actifs »

2016 – 2017 : Attaché Temporaire d'Enseignement et de Recherche à l'Université de Rennes 1

Sujet : Chimie supramoléculaire des clusters métalliques de type Mo_6

2015 – 2016 : Séjour postdoctoral dans le groupe du Prof. May Nyman à Oregon State University (USA)

Sujet : Etude de la polycondensation des atomes d'uranium (U^{4+} et UO_2^{2+}) en solution aqueuse via la diffusion des rayons X aux petits angles

2011 – 2014 : Doctorat (direction Thierry Loiseau) dans l'équipe « Chimie du solide et matériaux pour le nucléaire » de l'Unité de Catalyse et de Chimie du Solide, Université de Lille 1,

Intitulé de la thèse: Polymères de coordination: utilisation de matrices poreuses de type Metal-Organic Framework (MOF) pour la capture des radionucléides et cristallographie des carboxylates d'actinides légers (Th, U) tétravalents

2011: Stage de Master 2 sous la direction de Nathalie Audebrand (Université de Rennes 1) et de Virginie Moizan-Baslé (IFP Energies nouvelles, Solaize)

Sujet : Mécanosynthèse de matériaux poreux

1. J. Olchowka, C. Falaise, C. Volkringer, N. Henry and T. Loiseau; Structural observations of heterometallic uranyl copper(II) carboxylates and their solid-state topotactic transformation upon dehydration; **Chem.–Eur. J.**, (2013), 19, 2012–2022
2. C. Falaise, C. Volkringer, J.-F. Vigier, N. Henry, A. Beaurain and T. Loiseau; Three-dimensional MOF-type architectures with tetravalent uranium hexanuclear motifs (U_6O_8); **Chem.–Eur. J.**, (2013), 19, 5324–5331
3. C. Falaise, C. Volkringer and T. Loiseau; Mixed formate-dicarboxylate coordination polymers with tetravalent uranium: occurrence of tetranuclear $\{U_4O_4\}$ and hexanuclear $\{U_6O_4(OH)_4\}$ motifs; **Cryst. Growth Des.**, (2013), 13, 3225–3231
4. C. Falaise, C. Volkringer, J. Facqueur, T. Bousquet, L. Gasnot and T. Loiseau; Capture of iodine in highly stable Metal-Organic Frameworks: a systematic study; **Chem. Commun.**, (2013), 49, 10320–10322
5. C. Falaise, C. Volkringer, J.-F. Vigier, A. Beaurain, P. Roussel, P. Rabu and T. Loiseau; Isolation of the large $\{actinide\}_{38}$ poly-oxo cluster with uranium; **J. Am. Chem. Soc.**, (2013), 135, 15678–15681
6. C. Falaise, C. Volkringer and T. Loiseau; Isolation of thorium benzoate polytypes with discrete ThO_8 square antiprismatic units involved in chain-like assemblies; **Inorg. Chem. Commun.**, (2014), 39, 26–30
7. I. Mihalcea, C. Falaise, C. Volkringer, N. Henry and T. Loiseau; Room temperature crystallization of trichlorodioxouranate $[UO_2Cl_3(L)]$ species in molecular assemblies involving aliphatic dicarboxylate linkers; **Inorg. Chem. Commun.**, (2014), 44, 63–66
8. C. Falaise, A. Assen, I. Mihalcea, C. Volkringer, A. Mesbah, N. Dacheux and T. Loiseau; Coordination polymers of uranium (IV) terephthalates; **Dalton Trans.**, (2015), 44, 2639–2649
9. C. Falaise, J. S. Charles, C. Volkringer and T. Loiseau; Thorium terephthalates coordination polymers synthesized in solvothermal DMF/ H_2O system; **Inorg. Chem.**, (2015), 54, 2235–2242
10. C. Falaise, J. Delille, C. Volkringer and T. Loiseau; Solvothermal synthesis of tetravalent uranium with isophthalate or pyromellitate ligands; **Eur. J. Inorg. Chem.**, (2015), 2813–2821
11. S. Duval, S. Béghin, C. Falaise, X. Trivelli, P. Rabu and T. Loiseau; Stabilization of tetravalent 4f (Ce), 5d (Hf) or 5f (Th, U) cluster by the $[\alpha-SiW_9O_{34}]^{10-}$ polyoxometalate; **Inorg. Chem.**, (2015), 54, 8271–8280
12. C. Falaise, C. Volkringer, C. Hennig, and T. Loiseau; Ex-situ kinetic investigations of the formation of the poly-oxo cluster U_{38} ; **Chem.–Eur. J.**, (2015), 21, 16654–16664
13. T. Deb, L. Zakharov, C. Falaise and M. Nyman; Structure and solution speciation of U^{IV} -linked phosphomolybdate (Mo^V) clusters; **Inorg. Chem.**, (2016), 55, 755–761
14. N. Martin; C. Volkringer; C. Falaise; N. Henry and T. Loiseau; Synthesis and crystal structure characterization of thorium trimesate coordination polymer; **Cryst. Growth Des.**, (2016), 16, 1667–1678
15. C. Falaise and M. Nyman; The key role of U_{28} in aqueous self-assembly of uranyl peroxide nanocages; **Chem.–Eur. J.**, (2016), 22, 22, 14678–14687
16. N. Martin, C. Falaise, C. Volkringer, N. Henry, P. Farger, C. Falk, E. Delahaye, P. Rabu and T. Loiseau; Hydrothermal crystallization of four uranyl coordination polymers involving an imidazolium dicarboxylate ligand: effect of pH on the nuclearity of uranyl-centered sub-units; **Inorg. Chem.**, (2016), 55, 8697–8705

17. O. Renier, C. Falaise, H. Neal, K. Kozma and M. Nyman; Closing uranyl polyoxometalate capsules with bismuth and lead polyoxocations; **Angew. Chem. Int. Ed.**, (2016), 55, 13480-13484
18. C. Volkringer, C. Falaise; P. Devaux; R. Giovine; F. Pourpoint; O. Lafon; M. Osmond, C. Jeanjacques, B. Marcillaud; J-C. Sabroux and T. Loiseau; Stability of Metal-Organic Frameworks under gamma irradiation; **Chem. Commun.**, (2016), 52, 12502-12505
19. C. Falaise, J. Delille, C. Volkringer, H. Vezin, P. Rabu and T. Loiseau; Series of hydrated heterometallic uranyl-cobalt(II) coordination polymers with aromatic polycarboxylates ligands: formation of U=O-Co bonding upon dehydration process; **Inorg. Chem.**, (2016), 55, 10453-10466
20. A. S. Munn, F. Millange, M. Frigoli, N. Guillou, C. Falaise, V. Stevenson, C. Volkringer, T. Loiseau, G. Cibirin and R. Walton; Iodine Sequestration by Thiol-Modified MIL-53(Al); **CrystEngComm**, (2016), 18, 8108-8114
21. O. Sadeghi, C. Falaise, P. Molina, R. Hufschmid, C. Campana, B. Noll, N. Browning and M. Nyman; Chemical stabilization and electrochemical destabilization of the iron Keggin ion in water; **Inorg. Chem.**, (2016), 55, 11078-11088
22. C. Falaise, C. Volkringer, R. Giovine, B. Prelot, M. Huve and T. Loiseau; Capture of actinides (Th^{4+} , $[\text{UO}_2]^{2+}$) and surrogating lanthanide (Nd^{3+}) in porous metal-organic framework MIL-100 (Al) from water: selectivity and imaging of embedded nanoparticles; **Dalton Trans.**, 46, 12010-12014
23. C. Falaise, S. M. Hickam, P. C. Burns, M. Nyman; From aqueous speciation to supramolecular assembly in alkaline earth-uranyl polyoxometalates; **Chem. Commun.**, (2017), 53, 9550-9553
24. C. Falaise, H. Neal and M. Nyman; U(IV) Aqueous Speciation from the Monomer to UO_2 Nanoparticles: Two Levels of Control from Zwitterionic Glycine Ligands; **Inorg. Chem.**, (2017), 56, 6591-6598
25. P. Molina, K. Kozma, M. Santala, C. Falaise, M. Nyman; Aqueous Bismuth Titanium-Oxo Sulfate Cluster Speciation and Crystallization; **Angew. Chem. Int. Ed.**, (2017) 56, 16277-16281
26. A. A. Ivanov, C. Falaise, P. A. Abramov, M. A. Shestopalov, K. Kirakci, K. Lang, M. A. Moussawi, M. N. Sokolov, N. G. Naumov, S. Floquet, D. Landy, M. Haouas, K. A. Brylev, Y. V. Mironov, Y. Molard, S. Cordier and E. Cadot; Host-Guest Binding Hierarchy within Redox- and Luminescence Responsive Supramolecular Self-Assembly Based on Chalcogenide Clusters and γ -Cyclodextrin; **Chem. Eur. J.**, (2018), 13378-13378 (Front Cover + Very Important Paper)
27. C. Falaise, K. Kozma, and M. Nyman; Thorium oxo-clusters as building blocks for open frameworks; **Chem. Eur. J.**, (2018), 24, 14226-14232 (Hot Paper)
28. C. Falaise, M. A. Moussawi, S. Floquet, P. A. Abramov, M. N. Sokolov, M. Haouas, E. Cadot. Probing dynamic library of metal-oxo building blocks with γ -cyclodextrin; **J. Am. Chem. Soc.** (2018) 140, 11198-11201

Brevets

1. C. Falaise, N. Audebrand, V. Moizan-Baslé, B. Harbuzaru and N. Bats; Nouveau matériau hybride organique-inorganique IHM-3 et son procédé de fabrication; FR 2976935 A1 (2011)
2. C. Falaise, N. Audebrand, V. Moizan-Baslé, B. Harbuzaru and N. Bats; Nouveau matériau hybride organique-inorganique IHM-4 et son procédé de fabrication; FR 2978442 A1 (2011)