

CURRICULUM VITAE

DZENE Liva

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ACADEMIC QUALIFICATIONS

- Doctorate Degree in Earth Sciences, University of Poitiers, France (*September 2016*)
Thesis Title: “*Influence of particle size and crystal chemistry on cation exchange properties of swelling clay minerals*”
- MSc in Chemistry, University of Ottawa, Canada (*February 2014*)
- Master Degree in Earth Sciences, University of Poitiers, France (*September 2013*)
- BSc in Chemical Engineering, Riga Technical University, Latvia (*June 2011*)

PROFESSIONAL EXPERIENCE

- 2017 – present Assistant Professor
École Nationale Supérieure de Chimie de Mulhouse
Institut de Science des Matériaux de Mulhouse (France)
Courses: Inorganic Chemistry, Instrumentation, Analytical Chemistry.
Main research areas: clay mineral synthesis and characterization for application in catalysis.
- 2017 Postdoctoral Researcher
Institut de Science des Matériaux de Mulhouse (France)
Main activities: Synthesis and characterization of iron-rich phyllosilicates in the context of long-live radioactive waste repository.
- 2013-2016 Doctorate Thesis
Institut de Chimie des Milieux et Matériaux de Poitiers (France)
Main activities: The research project investigated the role played by particle size and crystal-chemistry on the exchange and fixation of cesium and strontium on swelling clay minerals. It included experimental sorption isotherms and associated thermodynamic modelling on size-selected clay fractions and on synthetic samples. Complementary structural information was obtained by means of X-ray diffraction and molecular simulations. (Supervisors: Dr. Eric Ferrage, Prof. Emmanuel Tertre and Dr. Fabien Hubert)

- 2013 Master Thesis
Centre for Catalysis Research and Innovation (Canada)
Main activities: A biodegradable polymer-clay nanocomposite synthesis was performed optimizing various synthesis parameters followed by a characterization of the composite materials structure (XRD, TEM, NMR) and thermal properties (TGA). (Supervisors: Prof. Christian Detellier and Dr. Rola Mansa)
- 2012 Research Internship
GeoBioTec, University of Aveiro (Portugal)
Main activities: The project included a fieldtrip to Porto Santo Island, then further laboratory experiments of clay mineral extraction and their chemical (XRF), mineralogical (XRD) and mechanical (abrasion, plasticity) characterization. (Supervisors: Prof. Fernando Rocha and Dr. Ana Quintela)

AWARDS AND HONORS

- Best presentation: 3rd place for oral presentation at the Clay Minerals Society's Annual Meeting in Atlanta, USA (2016)
- Student Travel Grant: Clay Mineral Society's Student Travel Grant to attend Euroclay conference / 52nd CMS Annual Meeting at Edinburgh, Scotland (2015)
- European Commission Scholarship of Erasmus Mundus for International Master of Advanced Clay Science (2011 - 2013)
- Kristaps Morbergs scholarship (2009 - 2010)

RESEARCH INTERESTS

1. **Synthesis of lamellar silicates for application in catalysis and composite materials:** hydrothermal synthesis, hybrid organic-inorganic layered compound synthesis and polymer-clay composite synthesis.
2. **Characterization of layered minerals:** structure analysis by X-ray diffraction coupled with adsorption experiments to investigate the reactivity of different surfaces.

PROFESSIONAL ACTIVITIES

Associate editor of Clay Minerals - Journal of Fine Particle Science 2021-2023.

Organization of conferences

- Chair of organizing and scientific committee "Curiosity - A French-German Young Chemists Conference" 30 June – 1 July 2022, Mulhouse, France.
- Organization committee of Nordic Clay Meeting / 3rd International and Interdisciplinary Symposium „Clays and Ceramics”, 8-10 February 2021, online.
- Scientific committee and chairman of session "Modification and synthesis of clays" of 9th Mid-European Clay Conference, 17-21 September 2018, Zagreb, Croatia.
- Chairman of 2nd International and Interdisciplinary Symposium „Clays and Ceramics”, 29-31 January 2018, Riga, Latvia.

- Scientific committee of 1st International and Interdisciplinary Symposium „Clays and Ceramics”, 28-29 January 2016, Riga, Latvia.
- Organization committee of the seminar “Clays and their characterization”, 1-2 February 2016, Riga, Latvia.

Scientific Societies

- Chair of AIPEA Early Career Clay Scientist Committee 2021-2025.
- Councilor of Clay Mineral Society 2021-2024.
- Secretary of European Young Chemist Network 2021-2023.
- Student Grant Committee member of Clay Science Society 2020-2023.
- French Delegate in European Young Chemist Network 2020-2022
- Member of the Board of Directors of French Clay Group since 2019.
- Chair of regional section Alsace of Réseau-Jeunes de Société Chimique de France 2018-2020.
- Board member of Latvian Clay Scientific Society since 2015.

STUDENT SUPERVISION

PhD

2. Danilo WAISMANN-LOSITO (2022 - ongoing) – Subject: Development of dual functional catalytic materials for integrated CO₂ capture and conversion
1. Laura CIPRIANO-CRAPINA (2019 - 2022) – Subject: Synthesis of catalysts based on iron-rich hybrid talc-like lamellar materials for application in advanced oxidation processes

Master Internships

8. Laura MIMAUD (2022, 6 months) – Subject: Synthesis in situ of polymer-clay composite
7. Lyna BENAZZOUZ (2022, 4 months) – Subject: Synthesis in situ of polymer-clay composite
6. Frédéryck TIDAS (2021, 6 months) – Subject: Synthesis in situ of polymer-clay composite
5. Öykü ATAYTUR (2021, 6 months) – Subject: Synthesis and characterization of layered silicates for the study of their acid properties
4. Sebastian MEYER (2019, 6 months) – Subject: Characterization of synthetic clay minerals for the study of their acid properties
3. Hugo CASSES (2019, 6 months) – Subject: Characterization of cement-based material in the context of long-live radioactive waste repository
2. Axel CAPITAINE (2018, 4 months) – Subject: Synthesis of saponites for the study of their acid properties
1. Héloïse VERRON (2015, 4 months) – Subject: Influence of the layer charge on the cesium desorption from saponites

SCIENTIFIC PRODUCTION

• Articles in Peer-reviewed journals

15. **Dzene, L.**, Dutournié, P., Brendlé, J., Limousy, L., Le Meins, J.-M., Michelin, L., Vidal, L., Gree, S., Abdelmoula, M., Martin, C., Michau, N. (2022) Characterization of Iron-Rich Phyllosilicates Formed at Different Fe/Si Ratios. *Clays and Clay Minerals*, in press.
14. Dutournié, P., **Dzene, L.**, Ponche, A., Daou, J., Déon, S. (2022) Experimental and numerical investigation of specific behaviour of fluoride ions during filtration of pure salt water solutions with titania membrane. *Desalination*, **537**, 115870.
13. Cipriano Crapina, L., **Dzene, L.**, Brendlé, J., Fourcade, F., Amrane, A.; Limousy, L. (2021) Review: Clay-Modified Electrodes in Heterogeneous Electro-Fenton Process for Degradation of Organic Compounds: The Potential of Structural Fe(III) as Catalytic Sites. *Materials*, **14**, 7742.
12. Matangouo, B., Kenne Dedzo, G., **Dzene, L.**, Péguy Nansou-Njiki, C., Ngameni, E. (2021) Encapsulation of butylimidazole in smectite and slow release for enhanced copper corrosion inhibition. *Applied Clay Science*, **213**, 106266.
11. Kenne Dedzo, G., Rigolet, S., Josien, L., Ngameni, E., **Dzene, L.** (2021) Functionalization of synthetic saponite: identification of grafting sites and application for anions sequestration. *Applied Surface Science*, **567**, 150911.
10. Meyer, S., Bennici, S., Vaulot, C., Rigolet, S., **Dzene, L.** (2020) Influence of the precursor and the temperature of synthesis on the structure of saponite. *Clays and Clay Minerals*, **68**, 544–552.
9. Boumaiza, H., Dutournié, P., Le Meins, J.-M., Limousy, L., Brendlé, J., Martin, C., Michau, N., **Dzene, L.** (2020) Iron-rich clay mineral synthesis using design of experiments approach. *Applied Clay Science*, **199**, 105876.
8. **Dzene, L.**, Brendlé, J., Limousy, L., Dutournié, P., Martin, C., Michau, N. (2018) Synthesis of iron-rich tri-octahedral clay minerals: A review. *Applied Clay Science*, **166**, 276-287.
7. **Dzene, L.**, Verron, H., Delville A., Michot L. J., Robert J.-L., Tertre E., Hubert, F., Ferrage, E. (2017) Influence of tetrahedral layer charge on the fixation of cesium in synthetic smectite. *Journal of Physical Chemistry C*, **121** (42), 23422-23435.
6. Jurgelane, I., Sevjakova, V., **Dzene, L.** (2017) Influence on illitic clay addition on the stability of sunflower oil in water emulsion. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **529**, 178-184.
5. **Dzene, L.**, Ferrage, E., Viennet J.-C., Tertre, E., Hubert, F. (2017) Crystal structure control of aluminized clay minerals on the mobility of caesium in contaminated soil environments. *Scientific Reports*, **7**; 43187.
4. **Dzene, L.**, Ferrage, E., Hubert, F., Delville A., Tertre, E. (2016) Experimental evidence of the contrasting reactivity of external vs. interlayer adsorption sites on swelling clay minerals: the case of Sr²⁺-for-Ca²⁺ exchange in vermiculite. *Applied Clay Science*, **132-133**, 205-215.

3. Viennet, J.-C., Hubert, F., Tertre, E., Robin, V., **Dzene, L.**, Ferrage, F., Turpault, M.-P. (2016) Effect of particle size on the dissolution and aluminization processes of K vermiculite. *Geochimica et Cosmochimica Acta*, **180**, 164-176.
2. Mansa, R., **Dzene, L.**, Rocha, F., Quintela, A., Detellier, C. (2016) Preparation and Characterization of Novel Clay/Scleroglucan Nanocomposites. *Applied Clay Science*, **126**, 235-244.
1. **Dzene, L.**, Tertre, E., Hubert, F., Ferrage, E. (2015) Nature of the sites involved in the process of cesium desorption from vermiculite. *Journal of Colloid and Interface Science*, **455**, 254–260.

- **Other articles**

Dzene L. ; Brendlé J. (2020) Les minéraux argileux, sources d'innovation depuis des millénaires. *The Conversation*, <https://theconversation.com/les-mineraux-argileux-sources-dinnovation-depuis-des-millennaires-146144> (publié le 2 novembre 2020).

Dzene L.; Jeguirim M.; Brendlé J.; Limousy L. (2019) Foreword of Second international symposium Clays and ceramics for environmental applications. *Comptes Rendus Chimie*, **22**, 103-104.

Barbane I.; Sedmale G.; **Dzene L.** (2011) Research of Dolomite – Clay Mixtures for Development of Roman Cement. *Scientific Journal of Riga Technical University*. Series 1. “Materials Science and Applied Chemistry”, **24**, 35-38.

- **Conference Communications**

- Oral communications (international):

17. Kenne Dedzo G., Rigolet S., Josien L., Ngameni E., **Dzene L.** Functionalization of synthetic saponite: addition of anion exchange property. 8th EuChemS Chemistry Congress, Lisbon, Portugal (28 August – 1 September 2022 / in person).
16. Doggaz A., **Dzene L.**, Dutournié P., Brendlé J., Martin C., Michau N. How selective can be synthesis of iron bearing clay minerals? 17th International Clay Conference, Istanbul, Turkey (25 - 29 July 2022 / in person).
15. **Dzene L.**, Schuller A.-S., Delaite C., Rigolet S., Tidas F., Brendlé J. Synthesis of polymer-talc like composite in-situ. 17th International Clay Conference, Istanbul, Turkey (25 - 29 July 2022 / in person).
14. Cipriano Crapina L., **Dzene L.**, Limousy L., Fourcade F., Amrane A. Synthesis of a novel clay-like modified electrode for waste water treatment with Heterogeneous Electro-Fenton process. Curiosity - A French-German Young Chemists Conference, Mulhouse, France (30 June - 1 July 2022 / in person).
13. Meyer S., Bennici S., Vaulot C., Rigolet S., **Dzene L.** Influence of the precursor and the temperature of synthesis on the structure of saponite. Nordic Clay Meeting / III International Symposium Clays and Ceramics, Riga, Latvia (8-10 February 2021 / online).

12. [Crapina L. C.](#), **Dzene L.**, Fourcade F., Amrane A., Limousy L. Hybrid inorganic-organic lamellar materials containing Fe(III): effect of Fe(III)/Mg(II) ratio on the condensation state. Nordic Clay Meeting / III International Symposium Clays and Ceramics, Riga, Latvia (8-10 February 2021 / online).
11. [Dutournié P.](#), **Dzene L.**, Boumaiza H., Brendlé J., Limousy L., Martin C., Michau N. Precipitation of iron-rich silicates in FeO-SiO₂ system. Nordic Clay Meeting / III International Symposium Clays and Ceramics, Riga, Latvia (8-10 February 2021 / online).
10. Boumaiza H., **Dzene L.**, Brendlé, J., Limousy, L., Dutournié, P., Martin, C., Michau, N. Synthesis of iron rich clays in the Fe/Si system using statistical experimental design. Euroclay 2019, Paris, France (1-5 July 2019).
9. **Dzene L.**, Brendlé, J.; Limousy, L.; Dutournié, P.; Martin, C.; Michau, N. Formation of iron-rich phyllosilicates in Si-Fe system in function of Fe/Si molar ratio. 9th Mid-European Clay Conference, Zagreb, Croatia (17-21 September 2018).
8. **Dzene L.**, Verron H., Delville A., Michot L. J., Robert J.-L., Tertre E., Hubert, F., Ferrage, E. Synthetic clays for study of complex soil phenomena: case of caesium desorption process. 2nd International, Interdisciplinary Symposium “Clays and Ceramics”, Riga, Latvia (29-31 January 2018).
7. **Dzene L.**, Verron H., Tertre E., Hubert F., Robert J.-L., Delville A., Michot L., [Ferrage E.](#) Influence of layer charge on cesium desorption process from 2:1 swelling clay minerals. 54rd Clay Mineral Society Meeting, Edmonton, Canada (2-8 June 2017).
6. **Dzene L.**, Ferrage E., Hubert F., Delville A., Tertre E. Experimental evidence of contrasted reactivity of external vs. interlayer adsorption sites on swelling clay minerals: the case of Sr²⁺-for-Ca²⁺ exchange in vermiculite. 53rd Clay Mineral Society Meeting, Atlanta, USA (5-8 June 2016).
5. Mansa R., Dziadkowiec J., **Dzene L.**, Quintela A., Rocha F., [Detellier C.](#) Clay minerals bionanocomposites: preparation, characterization and tests for drug release applications. 53rd Clay Mineral Society Meeting, Atlanta, USA (5-8 June 2016).
4. [Hubert F.](#), Viennet J.-C., **Dzene L.**, Tertre E., Lanson B., Ferrage E. Hydroxy-interlayered minerals: crystal structure, formation and implication for soil reactivity. 16th International Clay Conference, Granada, Spain (17-21 July 2017).
3. **Dzene L.**, Ferrage E., Viennet J.-C., Verron H., Robert J.-L., Delville A., Michot L., Tertre E., Hubert F. Caesium retention in swelling clay minerals: influence of layer charge and hydroxy-interlayering. 16th International Clay Conference, Granada, Spain (17-21 July 2017).
2. **Dzene L.**, Tertre E., Hubert F., Ferrage E. Nature of sites involved in cesium desorption from vermiculite. Euroclay Conference, Edinburgh, Scotland (5-10 July 2015).
1. **Dzene L.**, Tertre E., Hubert F., Ferrage E. Cs⁺-for-Na⁺ exchange on vermiculite – influence of particle size. Mid-European Clay Conference, Dresden, Germany (16-19 September 2014).

Oral communications (national):

7. **Dzene L.**, Dutournié P., Doggaz A., Le Meins J.-M., Brendle J., Martin C., Michau N. Synthèse de minéraux argileux riches en fer dans le système FeO-SiO₂-H₂O. 19^{ème} colloque annuel du Groupe Français des Argiles, Paris, France (11 -13 Mai 2022 / in person).
6. **Dzene L.**, Lanson M., Lanson B., Rigolet S., Vaultot C., Bennici S. Surface acidity of layered silicates: study of acid-site distribution by base desorption. 51^{ème} Journées de Calorimétrie et d'Analyse Thermique, Pocquerolles, France (21-24 June 2021/ online).
5. **Boumaiza H.**, **Dzene L.**, Brendlé J., Limousy L., Dutournié P., Martin C., Michau N. Influence of oxic conditions and OH/Fe ratio on the hydrothermal synthesis of iron-rich clay minerals. Matériaux 2018, Strasbourg, France (19-23 November 2018).
4. **Dzene L.**, Tertre E., Hubert F., Ferrage E. Influence of particle size on ion-exchange properties of swelling clay minerals. 14^{ème} Colloque du Groupe Français des Argiles, Poitiers, France (18-20 May 2016).
3. **Dzene L.**, Tertre E., Hubert F., Ferrage E. Sr²⁺-for-Ca²⁺ exchange on different particle size fractions of vermiculite. 74th scientific conference of the University of Latvia, Riga, Latvia (28-29 January 2016).
2. **Dzene L.**, Verron H., Tertre E., Hubert F., Robert J.-L., Ferrage E. Influence of particle size and layer charge on cesium desorption process from 2:1 swelling clay minerals. 3rd Russian Clay Group Meeting "ГЛИНЫ-2015", Moscow, Russia (2-4 December 2015).
1. **Dzene L.**, Tertre E., Hubert F., Ferrage E. Nature des sites impliqués dans le processus de désorption du césium de particules de vermiculite. 13^{ème} Colloque du Groupe Français des Argiles, Clermont-Ferrand, France (19-21 May 2015).

Posters:

6. **Dzene L.**, Lanson M., Lanson B., Rigolet S., Vaultot C., Bennici S. Acid sites on layered silicates: study of base desorption. 52^{ème} Journées de Calorimétrie et d'Analyse Thermique, Colmar, France (15-19 Juin 2022).
5. **Dzene L.**, Abdelmoula M., Le Meins J.-M., Vidal L., Dutournié P., Brendle J., Martin C., Michau N. Characterization of synthetic 1:1 type iron-rich clay mineral. 43^{èmes} Journées du Groupe Francophone de Spectrométrie Mössbauer, Nancy, France (18-19 Mai 2022).
4. **Dzene L.**, Brendlé, J., Limousy, L., Dutournié, P., Martin, C., Michau, N. Synthesis of two type Fe-Si clay mineral-like materials. Matériaux 2018, Strasbourg, France (19-23 November 2018).
3. **Dzene L.**, Ferrage E., Viennet J.-C., Verron H., Robert J.-L., Delville A., Michot L., Hubert F., Tertre E. Caesium retention in swelling clay minerals: influence of particle size, layer charge and hydroxy-interlayering. 15^{ème} Colloque du Groupe Français des Argiles, Marseille, France (22-24 May 2017).

2. Verron H., **Dzene L.**, Tertre E., Hubert F., Robert J.-L., Ferrage E. Influence de la charge structurale des saponites sur la désorption du césium. 14^{ème} Colloque du Groupe Français des Argiles, Poitiers, France (18-20 May 2016).
1. Mansa R., Huang C.T., **Dzene L.**, Detellier C. Novel Clay Nanocomposites: Preparation and Characterization using Various Biopolymers and Fillers. Canadian Chemistry Conference, Ottawa, Canada (13-17 June 2015).