

PERSONAL INFORMATION

Marco Voltolini



Struttura di Mineralogia, Petrografia, Geochemica e Giacimenti minerali. Via Botticelli 23 – 20133 Milano (MI)

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Skype name: marco_volt

Sex Male | Date of birth 12/06/1975 | Nationality Italian

WORK EXPERIENCE

Feb. 2022 – present

Ricercatore a tempo determinato di tipo B

Università degli Studi di Milano, Dipartimento di Scienze della Terra “Ardito Desio”.

Ricerca e didattica nell'ambito della mineralogia.

[Public University](#)

Aug. 2021 – Dec. 2021

Beamline Scientist

Sincrotrone Elettra S.C.p.A. (SYRMEP Beamline)

Sviluppo di strumenti e tecniche di imaging a raggi X.

[Research Center](#)

Feb. 2020 – Aug. 2021

Research Scientist

Lawrence Berkeley National Laboratory. Earth and Environmental Sciences Area

Ricerca nell'imaging a raggi X applicata ai geosistemi energetici e alla digenese delle rocce

[DOE National Lab](#)

Jun. 2017 – Jan. 2020

Senior Scientific Engineer Associate

Lawrence Berkeley National Laboratory. Earth and Environmental Sciences Area

Sviluppo di tecniche di imaging a raggi X in situ per la geoscienza energetica, geosequestro di CO₂.

Sviluppo di strumenti per l'elaborazione delle immagini e la fisica digitale delle rocce.

[DOE National Lab](#)

Jun. 2012 – May. 2017

Project Scientist

Lawrence Berkeley National Laboratory. Earth and Environmental Sciences Area

Sviluppo di tecniche di imaging a raggi X in situ per la geoscienza energetica, geosequestro di CO₂.

Sviluppo di strumenti per l'elaborazione delle immagini e la fisica digitale delle rocce.

[DOE National Lab](#)

Jul. 2010 – May. 2012

Postdoctoral Fellowship

Università di Padova, Dipartimento di Geoscienze (and Guest Scientist at the European Synchrotron Radiation Facility)

Relatore: Prof. Gilberto Artioli. Sviluppo di tomografia a diffrazione di raggi X in situ applicata a studi di idratazione del cemento. Metà tempo trascorso presso l'ESRF (titolare di un progetto a lungo termine)

Public University

Dec. 2008 – Jun. 2010

Postdoctoral Fellowship

Sincrotrone Elettra S.C.p.A. (SYRMEP Beamline)

Relatore: Dott.ssa Lucia Mancini. Sviluppo di strumenti e tecniche di imaging a raggi X.

Research Center

Nov. 2006 – Nov. 2008

Postdoctoral Fellowship

University of California Berkeley. Earth and Planetary Sciences Dept.

Relatore: Prof. Hans-Rudolf Wenk. Sviluppo di tecniche di analisi delle texture per diffrazione di raggi X.

Public University

Nov. 2002 – Jan. 2006

Ph.D. Candidate

Università degli Studi di Milano, Dipartimento di Scienze della Terra "Ardito Desio".

Relatore: Prof. Gilberto Artioli. Ricerca nel campo della geochimica H₂S tramite diffrazione di raggi X, imaging e modellazione.

Public University

Jan. 2002 – Nov. 2002

Ph.D. Candidate

Mineralogische-Petrographisches Institut der Universitaet Basel (CH).

Relatore: Prof Martin Kunz. Studi di cristallinità tramite diffrazione di cristallo singolo HP su zircone metamittico.

Public University

EDUCATION AND TRAINING

Feb. 2006

Ph.D. ("Dottorato") in Earth Sciences

Università degli Studi di Milano

Jun. 2001

M.S. ("Laurea") in Earth Sciences

Università degli Studi di Milano

PERSONAL SKILLS

Mother tongue(s)

Italian

Other language(s)

English

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
Proficient	Proficient	Proficient	Proficient	Proficient

Japanese	<div>Basic</div> <div>Basic</div> <div>Basic</div> <div>Basic</div> <div>Basic</div>
	~ Equivalent to JLPT N5
Communication skills	Buone capacità di comunicazione acquisite attraverso il lavoro di squadra internazionale, la gestione dei progetti e le presentazioni a conferenze internazionali.
Organisational / managerial skills	Buone capacità organizzative acquisite attraverso l'allestimento di laboratori scientifici, e la loro gestione. Competenze manageriali acquisite durante l'organizzazione del progetto, l'organizzazione di laboratori scientifici e gli utenti di strumenti scientifici presso le strutture degli utenti.
Job-related skills	<ul style="list-style-type: none"> - Imaging a raggi X (micro e nanotomografia computerizzata). - Tecniche di scattering di raggi X, neutroni ed elettroni, in particolare diffrazione "in polvere" (Rietveld). - Tomografia a diffrazione (XRDCT) - Misure in situ (imaging, diffrazione): HT, HP, flusso reattivo, T bassa, stress, ecc. - Elaborazione delle immagini e visualizzazione dei dati. - Caratterizzazione quantitativa di texture e microstruttura (tramite scattering e/o imaging). - Scienza del sincrotrone (diffrazione e imaging). - Fisica digitale delle rocce (flusso mono e multifase, MICP, ecc.). - Microscopia a forza atomica. - Zeoliti (cristallizzazione e dissoluzione). - Argille (reattività, caratterizzazione strutturale). - Argille (geochimica, caratterizzazione avanzata, anisotropia e proprietà meccaniche). - Serbatoi di petrolio e gas di scisto e comportamento propante. - Cemento e calcestruzzo (idratazione, agenti atmosferici, additivi, inerti, mix design). - Caratterizzazione di serbatoi e caprocks alla microscala. - Fratturazione idraulica e risorse di idrocarburi non convenzionali. - Vulcanologia e geologia strutturale. - (Bio-)materiali compositi. - Geosequestro della CO2.
Computer skills	Esperienza nella programmazione con linguaggio di script ImageJ, MatLab, Python. Software scientifico: suite di programmi GSAS, MAUD, Fit2D, XRDUA, Beartex, ImageJ/Fiji, VGStudio, Octopus, Cobra, Avizo (Fire), PHREEQCI, Crystals e WinGX.
Other skills	Lapidary, CNC machining.
Driving licence	B

ADDITIONAL INFORMATION

PUBLICATIONS IN PEER-REVIEWED JOURNALS

- A new modeling framework for multi-scale simulation of hydraulic fracturing and production from unconventional reservoirs
Birkholzer, J., Morris, J., Bargar, J., Brondolo, F., Cihan, A., Crandall, D., Deng, H., Fan, W., Fu, P., Fu, W. and Hakala, J.A., 2021. *Energies* 14(3):641
- Fracture sustainability in Enhanced Geothermal Systems: Experimental and modeling constraints.
Dobson, P.F., Kneafsey, T.J., Nakagawa, S., Sonnenthal, E.L., Voltolini, M., Smith, J.T. and Borglin, S.E., 2021. *Journal of Energy Resources Technology*, 143(10).
- Coupling dynamic in situ X-ray micro-imaging and indentation: A novel approach to evaluate micromechanics applied to oil shale.
Voltolini, M., Rutqvist, J. and Kneafsey, T., 2021. *Fuel*, 300, p.120987.
- Isotopic fractionation accompanying CO₂ hydroxylation and carbonate precipitation from high pH waters at The Cedars, California, USA.
Christensen, J.N., Watkins, J.M., Devriendt, L.S., DePaolo, D.J., Conrad, M.E., Voltolini, M., Yang, W. and Dong, W., 2021 *Geochimica et Cosmochimica Acta*, 301, pp.91-115.
- In-Situ 4D visualization and analysis of temperature-driven creep in an oil shale propped fracture.
Voltolini, M., 2021 *Journal of Petroleum Science and Engineering*, 200, p.108375.
- Flow and Permeability Evolution during Microbial Sulfate Reduction and Inhibition in Fractured Rocks.
Cheng, Y., Chou, C., Voltolini, M., Borglin, S., Ajo-Franklin, J.B. and Wu, Y., 2021. *Energy & Fuels*, 35(3), pp.1989-1997.
- Recent Advancements in X-Ray and Neutron Imaging of Dynamic Processes in Earth Sciences.
Mancini, L., Arzilli, F., Polacci, M. and Voltolini, M., 2020. *Frontiers in Earth Science*, p.395.
- Evolution Of Propped Fractures In Shales: The Microscale Controlling Factors As Revealed By In Situ X-Ray Microtomography.
Voltolini, M. and Ajo-Franklin, J., 2020. *Journal of Petroleum Science & Engineering*, 188, p.106861.
- The Sealing Mechanisms Of A Fracture in Opalinus Clay As Revealed By In Situ Synchrotron X-Ray Micro-Tomography
Voltolini M., Ajo-Franklin J. 2019 *Frontiers in Earth Sciences In Press*
- Biofilm Feedbacks Alter Hydrological Characteristics of Fractured Rock Impacting Sulfidogenesis and Treatment.
Cheng, Y., Hubbard, C.G., Geller, J.T., Chou, C., Voltolini, M., Engelbrektson, A.L., Coates, J.D., Ajo-Franklin, J.B. and Wu, Y., 2019. *Energy & Fuels*, 33(11), pp.10476-10486.
- The effect of CO₂-induced dissolution on flow properties in Indiana Limestone: An in situ synchrotron X-ray micro-tomography study.
Voltolini, M. and Ajo-Franklin, J., 2019. *International Journal of Greenhouse Gas Control*, 82, pp.38-47.
- Coupled processes in a fractured reactive system: A dolomite dissolution study with relevance to gcs caprock integrity.
Ajo-Franklin, J., Voltolini, M., Molins, S. and Yang, L., 2019. *Geological Carbon Storage*, p.187.
- A new mini-triaxial cell for combined high-pressure and high-temperature in situ synchrotron X-ray microtomography experiments up to 400° C and 24 MPa.
Voltolini, M., Barnard, H., Creux, P. and Ajo-Franklin, J., 2019. *Journal of Synchrotron Radiation*, 26(1).
- Microlite orientation in obsidian flow measured by synchrotron X-ray diffraction.
Manga, M., Voltolini, M. and Wenk, H.R., 2018. *Contributions to Mineralogy and Petrology*, 173(7), p.58.
- Supercritical CO₂ uptake by nonswelling phyllosilicates.
Wan, J., Tokunaga, T.K., Ashby, P.D., Kim, Y., Voltolini, M., Gilbert, B. and DePaolo, D.J., 2018. *Proceedings of the National Academy of Sciences*, p.201710853.
- Visualization and prediction of supercritical CO₂ distribution in sandstones during drainage: An in situ synchrotron X-ray micro-computed tomography study.
Voltolini, M., Kwon, T.H. and Ajo-Franklin, J., 2017. *International Journal of Greenhouse Gas Control*, 66, pp.230-245.
- Pore-scale investigations into the stability of residual CO₂.
Garing, C., de Chalendar, J.A., Voltolini, M., Ajo-Franklin, J.B. and Benson, S.M., 2017. *Bulletin of the American Physical Society*, 62.
- The emerging role of 4D synchrotron X-ray micro-tomography for climate and fossil energy studies: five experiments showing the present capabilities at beamline 8.3. 2 at the Advanced Light Source.
Voltolini, M., Haboub, A., Dou, S., Kwon, T.H., MacDowell, A.A., Parkinson, D.Y. and Ajo-Franklin, J., 2017. *Journal of synchrotron*

radiation, 24(6), pp.1237-1249.

- Wollastonite carbonation in water-bearing supercritical CO₂: Effects of particle size.

Min, Y., Li, Q., Voltolini, M., Kneafsey, T. and Jun, Y.S., 2017. *Environmental science & technology*, 51(21), pp.13044-13053.

- Alteration and erosion of rock matrix bordering a carbonate-rich shale fracture.

Deng, H., Voltolini, M., Molins, S., Steefel, C.; DePaolo, D., Ajo-Franklin and J., Yang, L., 2017. *Environmental science & technology*, 51(15), pp.8861-8868.

- Pore-scale multiphase flow modeling and imaging of CO₂ exsolution in Sandstone.

Zuo, L., Ajo-Franklin, J.B., Voltolini, M., Geller, J.T. and Benson, S.M., 2017. *Journal of Petroleum Science and Engineering*, 155, pp. 63-77.

- Pore-scale capillary pressure analysis using multi-scale X-ray micromotography.

Garing, C., de Chalendar, J.A., Voltolini, M., Ajo-Franklin, J.B. and Benson, S.M., 2017. *Advances in Water Resources*, 104, pp.223-241.

- Effects of surface orientation, fluid chemistry and mechanical polishing on the variability of dolomite dissolution rates.

Saldi, G.D., Voltolini, M. and Knauss, K.G., 2017. *Geochimica et Cosmochimica Acta*, 206, pp.94-111.

- Quantitative characterization of soil micro-aggregates: New opportunities from sub-micron resolution synchrotron X-ray microtomography.

Voltolini, M., Tag, N., Wang, S., Brodie, E.L. and Ajo-Franklin J.B., 2017. *Geoderma*, 305, pp.382-393.

- Evaluation of accessible mineral surface areas for improved prediction of mineral reaction rates in porous media.

Beckingham, L.E., Steefel, C.I., Swift, A.M., Voltolini, M., Yang, L., Anovitz, L.M., Sheets, J.M., Cole, D.R., Kneafsey, T.J., Mitnick, E.H. and Zhang, S., 2017. *Geochimica et Cosmochimica Acta*, 205, pp.31-49.

- Coupled Processes in a Fractured Reactive System: A Dolomite Dissolution Study with Relevance to GCS Caprock Integrity .

J. Ajo-Franklin; M. Voltolini; S. Molins and L. Yang (2016), in Caprock Integrity in Geological Storage : Hydrogeochemical and Hydrogeomechanical Processes and their Impact on Storage Security, ed. S. Vialle, B. Carey, and J. Ajo-Franklin, Wiley Publishing. *In press*.

- A 2.5D reactive transport model for fracture alteration.

H. Deng; S. Molins; C. Steefel; D. DePaolo; M. Voltolini; L. Yang; J. Ajo-Franklin (2016). *Environmental science & technology*, 50(14), pp. 7564-7571.

- Evaluation of mineral reactive surface area estimates for prediction of reactivity of a multi-mineral sediment.

L. E. Beckham; E. H. Mitnick; C. I. Steefel; S. Zhang, M. Voltolini; A. M. Swift, L. Yang; D. R. Cole; J. M. Sheets; J. B. Ajo-Franklin; D. J. DePaolo; S. Mito; Z. Xue (2016). *Geochimica et Cosmochimica Acta*. *Geochimica et Cosmochimica Acta*, 188, pp.310-329.

- Quantitative 3D microstructural analysis of naturally deformed amphibolite from the Southern Alps (Italy): microstructures, CPO and seismic anisotropy from a fossil extensional margin"

M. Zucali; V. Barberini; M. Voltolini; B. Ouladdiaf; D. Chateigner; L. Mancini and L. Lutterotti (2015) *Geological Society, London, Special Publications*, 409(1), pp.201-222.

- A combined synchrotron radiation micro computed tomography and micro X-ray diffraction study on deleterious alkali-silica reaction.

N. Marinoni, M. Voltolini, M.A.T.M. Broekmans, L. Mancini, P.J.M. Monteiro, N. Rotiroti, E. Ferrari, and A. Bernasconi. *Journal of Materials Science* 50, no. 24: 7985-7997 (2015).

- CO₂ mineralization in volcanogenic sandstones: geochemical characterization of the Etchegoin formation, San Joaquin Basin

S. Zhang, D.J. DePaolo, M. Voltolini, and T. Kneafsey. *Greenhouse Gases: Science and Technology* (2015).

- Near-liquidus growth of feldspar spherulites in trachytic melts: 3D morphologies and their implications in crystallization mechanisms

F. Arzilli, L. Mancini, M. Voltolini, M.R. Cicconi, S. Mohammadi, G. Giuli, E. Paris and M.R. Carroll *Lithos* 216: 93-105 (2015).

- Imaging of nano-seeded nucleation in cement pastes by X-ray diffraction tomography

G. Artioli, L. Valentini, M.C. Dalconi, M. Parisatto, M. Voltolini, V. Russo, and G. Ferrari *International Journal of Materials Research* (2014).

- Direct Imaging of Nucleation Mechanisms by Synchrotron Diffraction Micro-Tomography: Superplasticizer-Induced Change of C–S–H Nucleation in Cement.

G. Artioli, L. Valentini, M. Voltolini, M.C. Dalconi, G. Ferrari, and V. Russo. *Crystal Growth & Design* 15, no. 1 (2014): 20-23.

- The 3D quantitative lattice and shape preferred orientation of a mylonitised metagranite from Monte Rosa (Western Alps): Combining neutron diffraction texture analysis and synchrotron X-ray microtomography.

M. Zucali, M. Voltolini, B. Ouladiaff, L. Mancini and D. Chateigner
Journal of Structural Geology 63 (2014): 91-105.

- Understanding the cement hydration at the microscale: new opportunities from the "pencil-beam" synchrotron X-ray diffraction tomography

M. Voltolini, M.C. Dalconi, G. Artioli, M. Parisatto, L. Valentini, V. Russo, A. Bonnin, R. Tucoulou
Journal of Applied Crystallography (2013) 46 (1), 142-152

- Coating thickness determination in highly absorbing core-shell systems

H. Palancher, A. Bonnin, V. Honkimaki, H. Suhonen, P. Cloetens, T. Zweifel, R. Tucoulou, A. Rack, M. Voltolini.
Journal of Applied Crystallography (2012) 45, 906-913. doi:10.1107/S0021889812031159

- The influence of the aggregate mineralogy on the Alkali-Silica-Reaction effects on mortars studied by means of X-ray powder diffraction and imaging techniques.

N. Marinoni, M. Voltolini.
Journal of Material Science (2012) 47, 2845-2855.

- Multifractal analysis of Calcium Silicate Hydrate (C-S-H) mapped by X-ray diffraction microtomography.

L. Valentini, G. Artioli, M. Voltolini, M.C. Dalconi.
Journal of the American Ceramic Society (2012). DOI: 10.1111/j.1551-2916.2012.05255.x

- The dissolution of laumontite in acidic aqueous solutions: a controlled-temperature in situ atomic force microscopy study.

M. Voltolini, G. Artioli, M. Moret.
American Mineralogist (2012) 97(1), 150-158.

- 3D imaging of complex materials: the case of cement.

G. Artioli, M.C. Dalconi, M. Parisatto, L. Valentini, M. Voltolini, G. Ferrari.
International Journal of Materials Research (2012) 103(2), 145-150.

- Synchrotron X-ray computed microtomography investigation of a mortar affected by alkali-silica reaction: a quantitative characterization of its microstructural features

M. Voltolini, N. Marinoni, L. Mancini.
The Journal of Materials Science. (2011) 46, 6633-6641.

- Evaluation of microstructural properties of coffee beans by synchrotron X-ray microtomography: a methodological approach.

P. Pittia, G. Sacchetti, L. Mancini, M. Voltolini, F. Brun, G. Tromba, N. Sodini, F. Zanini.
Journal of Food Science (2011) 76(2), E222-E231.

- Texture analysis of volcanic rock samples: quantitative study of crystals and vesicles shape preferred orientation from X-ray microtomography data.

M. Voltolini, D. Zandomenighi, L. Mancini, M. Polacci.
Journal of Volcanology and Geothermal Research (2011) 202(1-2), 83-95.

- Hydroxylapatite lattice preferred orientation in bones: A study on macaque, human, and bovine samples

M. Voltolini, H.-R. Wenk, J. Gomez Barreiro, S.C. Agarwal.
Journal of Applied Crystallography (2011) 44, 928-934.

- Quantitative texture analysis from powder-like electron diffraction.

M. Gemmi, M. Voltolini, A.M. Ferretti, A. Ponti.
The Journal of Applied Crystallography (2011) 44, 454-461.

- Texture analysis of a turbostratically disordered Ca-montmorillonite

L. Lutterotti, M. Voltolini, H.-R. Wenk, K. Bandyopadhyay, T. Vanorio
American Mineralogist, (2010) 95, 98-103.

- Preferred orientations of phyllosilicates: Comparison of fault gouge, shale and schist.

H.-R. Wenk, W. Kanitpanyacharoen, M. Voltolini
J. Struct. Geol. (2010) 32, 478-489.

- Quantitative analysis of X-ray microtomography images of geomaterials: application to volcanic rocks

D. Zandomenighi, M. Voltolini, L. Mancini, F. Brun, D. Dreossi, M. Polacci
Geosphere (2010) 6(6).

- Post-cotunnite phase of the intrametallic compound AuIn₂ at high pressure

B.K. Godwal, S. Speziale, M. Voltolini, H.-R. Wenk, R. Jeanloz
Physical Review B (2010) 82, 064112, 1- 6.

- Anisotropy of experimentally compressed kaolinite-illite-quartz mixtures

M. Voltolini, H.-R. Wenk, N. H. Mondol, K. Bjørlykke, J. Jahren
Geophysics 74, D13 (2009); doi:10.1190/1.3002557

- An investigation of mortars affected by alkali-silica reaction by X-ray synchrotron microtomography: a preliminary study
N. Marinoni, M. Voltolini, L. Mancini, P. Vignola, A. Pagani, A. Pavese
J Mater Sci (2009) 44:5815–5823
DOI 10.1007/s10853-009-3817-9

- Dauphine´ twinning and texture memory in polycrystalline quartz. Part 3: texture memory during phase transformation
H.-R. Wenk, N. Barton, M. Bortolotti, S. C. Vogel, M. Voltolini, G. E. Lloyd, G. B. Gonzalez
Phys Chem Minerals 36 (10), 567-583 (2009)
DOI 10.1007/s00269-009-0302-6

- Deformation of lower-mantle ferropersicite (Mg,Fe)O across the electronic spin transition
J.-F. Lin, H.-R. Wenk, M. Voltolini, S. Speziale, J. Shu, T. S. Duffy
Phys Chem Minerals 36 (10), 585-592 (2009)
DOI 10.1007/s00269-009-0303-5

- In-situ Phase Transformation and Deformation of Iron at High Pressure and Temperature
L. Miyagi, M. Kunz, J. Knight, J. Nasiatka, M. Voltolini, H.-R. Wenk
Journal of Applied Physics, 2008, 104, 103510

- Long-term leaching test in concretes: An X-ray powder diffraction study
N. Marinoni, A. Pavese, M. Voltolini, M. Merlini
Cement & Concrete Composites 30 (2008) 700–705

- Anisotropy in shale from Mont Terri
H.-R. Wenk, M. Voltolini, H. Kern, T. Popp, M. Mazurek
The Leading Edge 27, 742 (2008); doi:10.1190/1.2944161

- Elastic anisotropy of clay
K. Bandyopadhyay, T. Vanorio, G. Mavko, H.-R. Wenk, M. Voltolini,
(2008) SEG Expanded Abstracts, 27, 1835.

- Preferred Orientations and Anisotropy in Shales: Callovo-Oxfordian Shale (France) and Opalinus Clay (Switzerland)
H.-R. Wenk, M. Voltolini, M. Mazurek, L.R. Van Loon, A. Vinsot
Clays and Clay Minerals; June 2008; v. 56; no. 3; p. 285-306; DOI: 10.1346/CCMN.2008.0560301

- Molecular resolution images of the surfaces of natural zeolites by atomic force microscopy
M. Voltolini, G. Artioli, M. Moret
Microporous and Mesoporous Materials Volume 61, Issues 1-3, 18 July 2003, Pages 79-84. doi:10.1016/S1387-1811(03)00357-3

- Microtopographic features and dissolution behavior of natural zeolite surfaces studied by Atomic Force Microscopy (AFM)
M. Voltolini, G. Artioli, M. Moret
Impact of zeolites and other porous materials on the new technologies at the beginning of the new millennium.
Studied in Surface Science and Catalysis 142 (2003)
R Aiello, G Giordano and F Testa (editors)

- Microscopic surface processes observed during the oxidative dissolution of sphalerite
G. De Giudici, M. Voltolini, M. Moret
European Journal of Mineralogy; July, August 2002; v. 14; no. 4; p. 757-762; DOI: 10.1127/0935-1221/2002/0014-0757

BOOK CHAPTERS

- Recent Advances in Pore Scale Imaging.
J. Ajo-Franklin, M. Voltolini
In: Bear, J., 2018. *Modeling Phenomena of Flow and Transport in Porous Media* (Vol. 31). Springer.

CONFERENCES/PROCEEDINGS

- Micromechanical Modeling of Ductile-Brittle Shale Behavior during Indentation Experiments Imaged by Synchrotron X-Ray Microtomography
J Rutqvist, M Voltolini, TJ Kneafsey
AGU Fall Meeting 2021

- Development and 4D visualization of pressure-solution rock fabrics at lab-compatible timescale using a calcite structural analogue: understanding the role of the microstructure ...

M Voltolini, B Gilbert
Goldschmidt2021• Virtual• 4-9 July

- Effects of Heat and Dissolved Calcium on the Sorption of Uranium (VI) in Bentonite Barrier Systems
DQ La, AG Diaz, M Voltolini, S Carrero, K Sauer, PM Fox, ...
Goldschmidt2021• Virtual• 4-9 July

- Chemically Induced Reduction of Fracture Closure for Shale Fractures Containing Sub-Monolayer Proppant
S Nakagawa, M Voltolini, SE Borglin, A Jew
55th US Rock Mechanics/Geomechanics Symposium

- Coupling In Situ X-Ray Micro-Imaging And Indentation: A Novel Approach To Evaluate Micromechanics Applied To Oil Shale
M Voltolini, TJ Kneafsey, J Rutqvist
AGU Fall Meeting Abstracts 2020, MR007-0011

- Key controls and impacts of reaction-driven alteration of fracture-matrix interface
H Deng, JB Ajo-Franklin, DJ DePaolo, JP Fitts, JJ Kim, S Molins, ...
AGU Fall Meeting Abstracts 2020, H067-01

- Multi-Scale Simulation of Hydraulic Fracturing and Production: Testing with Comprehensive Data from the Hydraulic Fracturing Test Site in the Permian Basin
J Birkholzer, J Morris, J Bargar, A Cihan, D Crandall, H Deng, P Fu, ...
EGU General Assembly Conference Abstracts, 19988

- Geochemical alteration of shale fractures and the bordering rock matrix
H Deng, M Voltolini, M Cheshire, S Molins, C Steefel, D DePaolo, ...
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY 257

- How the development of new in situ X-ray capabilities is key for Earth and Energy Sciences studies: three different examples on oil shales
Voltolini M., Ajo-Franklin J. 2020 [In-situ Studies of Rock Deformation Workshop](#) (NSF Research Coordination Network) Cornell High Energy Synchrotron Source. **(Invited)**

- How in situ imaging helps in avoiding further in situ imaging: the development of a predictive tool for virtual experiments in the CO2 geological sequestration field.
Voltolini, M., Kwon T.-K., Ajo-Franklin J., Oct. 2019. CAMERA workshop, LBNL. **(Invited)**

- In situ environmental cells for Hard X-ray micro-Tomography on ALS-beamline 8.3.2
MacDowell, A.A., Parkinson, D.Y., Barnard, H.S., Haboub, A., Cox, B., Marshall, D., Panerai, F., Bale, H., Nasiatka, J. R., Ajo-Franklin, J., Voltolini, M., Mansour, N.N., Ritchie, R.O., 2019. Lab-Wide Instrumentation
Poster Session. LBNL

- Geochemical alteration of shale fractures and the bordering rock matrix.
Deng, H., Voltolini, M., Cheshire, M., Molins, S., Steefel, C., DePaolo, D., Ajo-Franklin, J., Stack, A. and Anovitz, L., 2019, March. In *ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY* (Vol. 257). 1155 16TH ST, NW, WASHINGTON, DC 20036 USA: AMER CHEMICAL SOC.

- Particulate Matter & Treatment of Production Water for Beneficial Reuse
Lee J.Y., Stringfellow W., Voltolini M., Spycher N., Miller D., Fox P., 2019. Advanced Light Source Water-Energy Outreach Forum, Lawrence Berkeley National Laboratory, CA. **(invited)**

- Sustainability of hydraulic fracture conductivity in ductile and expanding shales.
Nakagawa S.S.B., Kneafsey T., Rutqvist J., Kim K., Voltolini M., 2018. DOE Mastering the subsurface through technology innovation, partnerships & collaboration: Carbon storage & oil & natural gas technologies review meeting, Pittsburgh.

- Pore-scale investigations into the stability of residual CO2.
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- The evolution of fractures in an oil shale from in situ synchrotron XR-microtomography experiments at different conditions: results and general implications for geological CO₂ sequestration and unconventional oil recovery

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- Laboratory Determination of Fracture Sustainability in EGS Systems

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L. Beckingham, E. Mitnick, S. Zhang, M. Voltolini, L. Yang, C. Steefel, A. Swift, D. Cole, J. Sheets, T. Kneafsey, G. Landrot, L. Anivitz, S. Mito, Z. Xue, J. Ajo-Franklin, D. DePaolo. AGU Fall Meeting 2015

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- Multi-scale X-ray Microtomography Imaging of Immiscible Fluids After Imbibition

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- The Evolution of Fractures in Rocks Relevant to CO₂ Geological Sequestration: a 4D Synchrotron X-Ray MicroCT Study
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- The characterization of the microstructure of geological materials: an example of analysis on a sandstone sample relevant for CO₂ Geological Sequestration measured via SXR-microCT
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M. Voltolini, L. Yang, J.B. Ajo-Franklin
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- A Highly Resolved Direct Numerical Simulation Model of Reactive Transport at the Pore Scale
S. Molins, D. Trebotich, T.J. Ligocki, M. Voltolini, L. Yang, J.B. Ajo Franklin, C.I. Steefel
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- Quantitative texture analysis of talc in mantle hydrated mylonites
J.M. Benitez-Perez, J. Gomez Barreiro, H.R. Wenk, S.C. Vogel, Y. Soda, M. Voltolini, J.R. Martinez-Catalan
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- In-situ Laser Heating and Pressure Change With Radial Diffraction to Investigate Deformation of Deep Earth Relevant Minerals
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- Deformation of MgSiO₃ perovskite at high pressure using diamond anvil cells and in- situ radial diffraction
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