Notice titres et travaux Karim Benzerara, Août 2018

1. CURRICULUM VITAE

Karim Benzerara, né le 02 Février 1976, nationalité française

Formation

- Habilitation à diriger des recherches, U. Paris Diderot, 09/2010
- Thèse de Géochimie Fondamentale, U. Paris Diderot, 12/2002
- Agrégé des Sciences de la Vie et de la Terre (1998)
- Elève de l'Ecole Normale Supérieure de la rue d'Ulm (1995-1999)

Activités Professionelles

- *Février-Mai 2014 :* Chercheur invité au département Géosciences et de l'Environnement de l'UNIL (Lausanne) – Lauréat d'une bourse de la Fondation Herbette
- *Oct 2012 –* : directeur de recherche 2ème classe au CNRS
- *2009 –*: chercheur associé, ligne STXM (HERMES) au synchrotron SOLEIL (Paris, France)
- *2008-2012* : chargé de recherche de 1ère classe au CNRS à l'Institut de Minéralogie et de Physique des Milieux Condensés, UMR 7590, CNRS & UPMC
- *2004-2008* : chargé de recherche de 2ème classe au CNRS à l'Institut de Minéralogie et de Physique des Milieux Condensés, UMR 7590, CNRS & UPMC
- *2003-2005* : Postdoctorat puis chercheur invité à l'université de Stanford avec G.E. Brown, Jr.

Administration/Animation de la Recherche

- A partir de Janvier 2019, Directeur adjoint de l'IMPMC
- Membre nommé (2018-) du conseil du département Origines et Evolution du MNHN
- Conseiller élu (2013-2018) de l'European Association of Geochemistry (~3500 adhérents). Fonction : trésorier. En cours de passation de fonction à E. Rose-Koga
- Co-animateur de l'axe Biominéralisation du Labex Matisse (2011-2018)
- Membre du Review Panel du programme Exobiology de la NASA (2015)
- Conseil scientifique de la plateforme européenne pour les matériaux anciens (IPANEMA) à SOLEIL (2010-2014)
- Conseil scientifique de l'établissement du Muséum National d'Histoire Naturelle (2011-Janv 2015)
- Responsable de l'équipe Géobiologie de l'IMPMC (2008-Dec 2013)
- Membre du conseil d'administration de l'Institut de Physique du Globe de Paris (IPGP, 2010-2012)
- Comité du programme INTERRVIE (interactions entre la Terre et la Vie) (2008-2012)
- Membre de comités de recrutement à l'Université et à SOLEIL
- Membre du comité de la SFMC des utilisateurs du synchrotron en Sciences de la Terre (2009-2012)

Distinctions

- Bourse de postdoctorat Lavoisier, Ministère des Affaires Etrangères, 2003
- Médaille de Bronze du CNRS, 2009.

- Médaille Houtermans de l'EAG (European Association of Geochemistry), 2010.
- Distinguished Lecturer de l'EAG, 2011.
- Mineralogical Society of America Award et Life Fellow de la MSA, 2012.
- F. Earl Ingerson Lecturer de la Geochemical Society, 2017.

Thèmes de Recherche

Biominéralogie, Recherche de traces de vie anciennes, Microscopies électronique et des rayons X, Carbone organique et carbonates, Fossilisation

Terrains d'étude

Lacs volcaniques du Mexique, Lac Pavin, Lagunes hypersalées de Sardaigne. Synchrotrons (SOLEIL, Berkeley, Canada, ESRF).

Publications

- Researcher ID : http://www.researcherid.com/rid/J-1532-2016
- >101 publications dans des journaux de rang A, >3524 citations, hindex=35 (Web of Science)
- 1 livre et 8 chapitres de livre
- 3 articles rédigés dans des journaux de vulgarisation

Conférences et écoles internationales

- 23 conférences invitées et plénières dans des congrès internationaux (EGU, Goldschmidt…)
- 16 conférences invitées et plénières dans des congrès nationaux
- 11 invitations dans des écoles internationales pour doctorants et postdoctorants

Organisation de sessions dans des congrès internationaux, de congrès et écoles

- Organisation de 12 sessions à l'EGU, la Goldschmidt et l'IMA
- Organisation du thème "Interfaces from the nano to macro scales" pour la Goldschmidt 2013 et du thème « Nano to microscale processes in geochemistry » pour la Goldschmidt 2017
- Co-organisateur (trésorier) de la Goldschmidt à Prague 2015 et de la Goldschmidt à Paris 2017
- Co-organisateur avec T. Coradin d'une école internationale sur la biominéralisation, Paris, 1-5 décembre 2014. Financement CNRS et Labex Matisse. (93 participants).

Services éditoriaux et comme rapporteur

- Editeur associé à *Geochemical Perspective Letters (GPL, 2018-)*
- Editeur associé à *Geobiology* (2014-)
- Editeur associé à Frontiers in Earth Science (2016-2019)
- Editeur d'un numéro spécial sur la biominéralisation intracellulaire dans *Frontiers in Microbiology* (2014)
- Editeur d'un numéro spécial sur la biominéralisation dans *Mineral*
- Editorial Board du journal *European Journal of Mineralogy* (2010-2014)
- Rapporteur pour Science, PNAS, Nature Comm, GCA, EPSL, ES&T…
- Rapporteur pour les comités synchrotron de l'ALS (Berkeley), SSRL (Stanford) et CLS (Saskatoon)
- Reviewer pour l'ANR, l'ERC, la NSF, la NASA, l'INSU, DIM Ile de France, le DFG, le FNRS, le

SNSF…

Enseignement

- Membre du jury du concours BCPST pour l'entrée aux ENS, épreuve TIPE (2005-2008)
- Jury de l'agrégation en Sciences de la Vie et de la Terre (2007- 2011)
- Vice-présidence du jury de l'agrégation (2011-2014))
- Enseignements en L3, M1, M2, écoles doctorales et préparations au CAPES et à l'agrégation (UPMC, EPFL, Stanford, Univ Paris Diderot-IPGP, MNHN, Univ Orsay, Bordeaux) ~30 h/an.

Encadrements d'étudiants et participation à des jury

- Co-encadrement de 12 thèses dont 9 comme encadrant officiel principal. 2 thèses ont reçu le prix Haüy-Lacroix (SFMC), 1 de la fédération française de Géologie. 1 ex-étudiant est CR2 au CNRS, 1 MCF à l'université de Lille, 1 MCF au MNHN; 1 est assistant professor à PennState ; 1 est praticienne/chercheur à l'Hopital Tenon. Les autres sont postdocs (ETH Zurich, UC Berkeley, CEREGE), ATER ou en cours de thèse. Encadrement de 3 étudiants de thèse étrangers venus 3 mois en séjour dans notre équipe (1 de l'université de Jena ; 1 de l'université de Madrid ; 1 université Rio).
- Encadrement de 10 postdoctorants.
- Encadrement de 10 étudiants de M2 (IPGP, Approche Interdisciplinaire du Vivant à P5, INAPG, Rennes, UPMC), 3 étudiants de M1 et 5 étudiants de L3 (Magistère ENS Lyon, UPMC) ;
- 22 jurys de thèse dont 4 à l'étranger (cf détails ci-dessous)
- 6 jurys d'HDR (cf. détails ci-dessous)

Valorisation culturelle

- Interview à la radio suisse RSR (09/2009)
- Rédaction d'articles dans le magazine la Recherche (03/2008 ; 10/2011) et dans l'Actualité Chimique (10/2011) ; contribution à divers articles dans La Recherche (07/2012), Science & Avenir (04/2012 ; 01/2017), Sciences Actualités (10/2013)
- Organisation de stands et d'exposés pour la fête de la science en 2009, 2010
- Intervenant pour la Science Académie pour des jeunes de quartiers défavorisés (Juillet 2008)
- Café des sciences Combs la Ville (Octobre 2009) et conférences grand public
- Participation au documentaire « Atom Sweet Home », Vincent Gaullier, Universcience, Ex Nihilo, CNRS Images, Réseau Canopé, avec la participation de France Télévisions (12/2015)
- Participation au documentaire « Dallol, aux frontières de la vie » Olivier Grunewald. Camera lucida, coproduction Ushuaïa TV, participation de TV5 Monde (04/2016)

Sélection de Projets de Recherche passés et actuels

- Stanford-France collaboration grant de l'université de Stanford et PICS (2005 & 2007)
- Projet scientifique de la ligne HERMES (STXM) à SOLEIL (2006). Classée 1 par le SAC. Financé à hauteur de 2.8 M€
- ANR JC NanoBioChem, "Biomineralization at the nanoscale: Merging Biology, Geochemistry and Mineralogy in Studies of Prokaryote and Eukaryote Biominerals" (2006-2009), 200 k€
- Lauréat d'une subvention scientifique de la Fondation Del Duca (Institut de France) 2011, "Fossilisation expérimentale de microorganismes pour une meilleure compréhension des

premières traces de vie sur Terre », 164 k€.

- Co-PI d'un Approved Program (AP) à l'Advanced Light Source (Berkeley), qui garantit un pourcentage de temps d'accès au STXM sur 3 ans dans le cadre d'un programme de recherche ambitieux et du développement de nouveaux outils (2012-2014), puis PI d'un projet général à l'ALS (2015-2016). ~10j/an de STXM à Berkeley. PI de plusieurs projets STXM, micro-XRF ou XAFS à SOLEIL, ESRF, SSRL et CLS.
- Co-rédacteur puis co-animateur de l'axe Biominéralisation du Labex Matisse avec T.Coradin et JF.Lambert. (www.matisse.upmc.fr/en/research/scientific_axes/axis_1_biomineralization.html)
- Accueillant de chercheurs étrangers : Sergey Karpov, *Research in Paris* (2013-2014, 6 mois) ; Alexis S templeton, *Labex Matisse* (2013, 2 mois)
- PI d'un Projet Convergence de Sorbonne Université, « Study of Proterozoic microbialites as unconventional reservoirs from the Irece Basin – Chapada Diamantina » collaboration avec l'université de Rio (2015)
- PI et co-PI de projets INSU (e.g. Interrvie 215 avec C Rollion Bard (IPGP) « Les fractionnements isotopiques du calcium dans les microbialites : un traceur des conditions environnementales ? »), ATM MNHN (e.g., ATM 2016 avec JP Saint-Martin (CR2P) « Un modèle unique de stromatolite actuel dans le domaine méditerranéen : l'exemple des étangs côtiers de la Sardaigne »).
- Participant à l'ANR PRC Nano-heaters « Engineering nano-heaters in vivo using metal-load nano-cage assembly" (co-PI: Z. Gueroui & F. Guyot), 2017-2021.
- Co-PI d'un projet de bourse postdoc Labex Matisse avec F Minoletti (ISTEP) « Anomalie strontique du plancton calcaire : approche biogéochimique et minéralogique », 2017-2019.
- Participant à l'ITN SINGEK, H2020, "Promoting SINgle cell GEnomics to explore the ecology and evolution of hidden microeuKaryotes" (2016-2020).
- Secondment de la bourse Marie Curie de Maria Pilar Asta Andres, « Amorphous Precursors in Biomineralization », H2020. Co-PI : Alejandro Fernandez-Martinez (ISTerre), 2017-2019.
- Collaborateur sur le projet SUPERCAM (Raman-LIBS-IR sur Rover), Mars2020, https://mars.nasa.gov/mars2020/mission/instruments/supercam/team-members/
- PI ERC Calcyan (ERC Consolidator Grant), 2013-2018. 1,659 M€.
- ANR "Microbialites : Biogeochemical determinants of microbialite formation" avec P. Lopez-Garcia (Orsay), C. Thomazo (U Dijon). Financée AO 2018, début : Février 2019.

Sélection de projets à venir

- Proof of Concept ERC, « Cyanobacterial remediation of radioactive strontium", to be submitted 01/2019

2. BILAN D'ACTIVITE DETAILLE

Publications (dans journaux de rang A)

1. Gillet, P., Barrat, J.A., Heulin, T., Achouak, W., Lesourd, M., Guyot, F., and **Benzerara, K**. (2000) Bacteria in the Tatahouine meteorite: nanometric-scale life in rocks. *Earth and Planetary Science Letters*, 175, 161-167.
2. Malavergne, V., Guyot, F., **Benzerara** K., and Martinez, I. (2001) Description of new shock-induced phases in the meteorites of Shergotty, Zagami, Nakhla and Chassigny. *Meteoritics*, 36, 1297-1306.
3. **Benzerara K.**, J.A. Barrat, F. Guyot, P. Gillet and M. Lesourd. (2002) Cristobalite inclusions in

the Tatahouine achondrite: Implications for the shock conditions. *American Mineralogist.* 87, 1250-1256.

4. Gillet, Ph. Barrat, J.A, Deloule, E., Wadhwa, M., Jambon, A., Sautter, V., Crozaz, G., Devouard, B., Neuville, D., **Benzerara**, K., Lesourd, M. (2002) Aqueous alteration in the North West Africa 817 (NWA 817) Martian Meteorite. *Earth and Planetary Science Letters*. 203, 431-444.
5. **Benzerara K.**, Menguy, N., Guyot, F., Dominici, D., and Gillet, P. (2003) Nannobacteria- like calcites at surface of the Tatahouine meteorite. *Proc. Natl. Acad. Sci. USA* 100, 7438-7442.
6. Yoon T.-H., Johnson S.B., **Benzerara** K., Doyle C.S., Tyliszczak T., Shuh D.K., and Brown G.E., Jr. (2004) In Situ Characterization of Aluminum-Containing Nanoparticle- Aqueous Suspensions Using Scanning Transmission X-ray Microscopy. *Langmuir* 20, 10361-10366.
7. **Benzerara** K., Menguy N., Guyot F., Skouri F., de Lucca G., and Heulin T. (2004) Bacteria-controlled precipitation of calcium phosphate by R. tataouinensis. *EPSL* 228, 439-449.
8. **Benzerara**, K., Menguy, N., Guyot, F., De Luca G., Heulin, T., and Audrain, C. (2004) Experimental colonization and weathering of orthopyroxenes by the pleomorphic bacteria Ramlibacter tatahouinensis. *Geomicrobiology Journal*. 21, 341-349.
9. **Benzerara** K., Yoon T.-H., Tyliszczak T., Constantz B., Spormann A.M., and Brown, G.E. Jr. (2004) Scanning Transmission X-ray Microscopy Study of Microbial Calcification. *Geobiology*, 2, 249-259.
10. **Benzerara** K., Yoon T.-H., Menguy N., Tyliszczak T., and Brown G. (2005) Nanoscale Environments Associated with Bioweathering of a Meteoritic Mg-Fe-Pyroxene. *Proc. Natl. Acad. Sci. USA*, 102, 979-982.
11. **Benzerara** K., Menguy, N., Guyot, F., Vanni, C, and Gillet P. (2005) High resolution study of silicate-carbonate-micro-organism interface prepared by focused ion beam (FIB). *Geochim. Cosmochim. Acta*, 69, 1413-1422.
12. López-García P., Kazmierczak J., **Benzerara** K., Kempe S., Guyot F., Moreira D. (2005) Bacterial diversity and carbonate precipitation in the giant microbialites from the highly alkaline Lake Van, Turkey. *Extremophiles*, 9, 263-274.
13. Chanal A., Chapon V., **Benzerara** K., Barakat M., Christen R., Chevenet F., Achouak W., Barras F., and Heulin T. (2006). The desert of Tataouine: an extreme environment that hosts a wide diversity of microorganisms and radiotolerant bacteria. *Environ. Microbiol*. 8 (3): 514-525.
14. Bluhm H., Andersson K., Araki T., **Benzerara K.**, Brown G.E., Dynes J.J., Ghosal S., Gilles M.K., Hansen H.-C., Hemminger J.C., Hitchcock A.P., Ketteler G., Kilcoyne A.L.D., Kneedler E., Lawrence J.R., Leppard G.G., Majzlam J., Mun B.S., Myneni S.C.B., Nilsson A., Ogasawara H., Ogletree D.F., Pecher K., Salmeron M., Shuh D.K., Tonner B., Tyliszczak T., Warwick T., Yoon T.H. (2006) Soft X-ray Microscopy and Spectroscopy at the Molecular Environmental Science Beamline at the Advanced Light Source. *J. Elec. Spectros. and Related Phenom.150, 86-104.*
15. **Benzerara** K., Menguy N., López-García P., Yoon T.H., Kazmierczak J., Tyliszczak T., Guyot F., Brown, G.E. Jr. (2006) Nanoscale detection of organic signatures in carbonate microbialites. *Proc. Natl. Acad. Sci. USA* 103, 9440-9445.
16. **Benzerara K.**, V. Chapon, D. Moreira, P. López-García, T. Heulin, F. Guyot. Microbial diversity on the Tatahouine meteorite (2006) *Meteoritics and Planetary Sciences*, 41, 1249-1265.
17. Yoon T.H., **Benzerara** K., Ahn S., Luthy R.G., Tyliszczak T. and Brown, G.E. Jr. (2006) Nanometer-Scale Chemical Heterogeneities of Black Carbon Materials and Their Impacts on PCB Sorption Properties: Soft X-ray Spectromicroscopy Study. *Env. Sci. &Technol.* 40, 5923-5929.
18. **Benzerara K.**, V.M. Miller, G. Barell, V. Kumar, J. Miot, G.E. Brown, Jr., and J.C. Lieske (2006) Search for microbial signatures within human and microbial calcifications using soft X-

ray spectromicroscopy. *Journal of Investigative Medicine* 54, 367-379.

19. **Benzerara** K., N. Menguy, N.R. Banerjee, T. Tyliszczak, F. Guyot and G.E. Brown, Jr. (2007) Alteration of submarine basaltic glass from the Ontong Java Plateau: a STXM and TEM study. *Earth Planet. Sci. Lett*. 260, 187-200.
20. Bernard S., K. **Benzerara**, O. Beyssac, N. Menguy, F. Guyot, G.E. Brown Jr., B. Goffé (2007) Exceptional preservation of fossils plant spores in high-pressure metamorphic rocks. *Earth Planet. Sci. Lett*, 262, 257-272.
21. Nisbet E., Zahnle K, Gerasimov MV, Helbert J, Jaumann R, Hofmann BA, **Benzerara** K, Westall F. (2007) Creating habitable zones, at all scales, from planets to mud micro- habitats, on earth and on mars. *SPACE SCIENCE REVIEWS* 129 (1-3): 79-121.
22. van Thienen P, **Benzerara** K, Breuer D, Gillmann C, Labrosse S, Lognonne P, Spohn T (2007) Water, life, and planetary geodynamical evolution. *SPACE SCIENCE REVIEWS* 129 (1-3): 167-203.
23. Lepot K., K. **Benzerara**, G.E. Brown Jr. & P. Philippot (2008) Microbially influenced formation of 2,724-million-year-old stromatolites. *Nature Geoscience*, 1, 118 - 121.
24. **Benzerara K.**, G. Morin, T.H. Yoon, J. Miot, T. Tyliszczak, C. Casiot, O. Bruneel, F. Farges, and G.E. Brown, Jr. (2008) Nanoscale study of As biomineralization in an acid mine drainage system. *Geochim. Cosmochim. Acta*, 72, 3949-3963.
25. Bernard S., **K. Benzerara**, O. Beyssac, G.E. Brown Jr., L. Grauvogel Stamm, P. Duringer (2009) Ultrastructural and chemical study of modern and fossil sporoderms by Scanning Transmission X-ray Microscopy (STXM). *Review of Palaeobotany and Palynology*, 156, 248-261.
26. Bernard S., O. Beyssac, **K. Benzerara** (2008) Raman mapping using advanced line-scanning systems: geological applications. Applied Spectroscopy, 62, 1180-1188.
27. Schädler S., C. Burkhardt, F. Hegler, K.L. Straub, J. Miot, **K. Benzerara**, A. Kappler (2009) Formation of cell-iron-mineral aggregates by phototrophic and nitrate-dependent anaerobic Fe(II)-oxidizing bacteria. Geomicrobiology Journal, 26, 93-103.
28. Miot J., **K. Benzerara**, G. Morin, A. Kappler, S. Bernard, M. Obst, C. Férard, F. Skouri- Panet, J.M. Guigner, N. Posth, M. Galvez, G.E. Brown Jr, F. Guyot (2009) Iron biomineralization by neutrophilic iron-oxidizing bacteria. *Geochimica Cosmochimica Acta*, 73, 696-711.
29. Miot J., **K. Benzerara**, G. Morin, S. Bernard, O. Beyssac, E. Larquet, G. Ona-Nguema, A. Kappler, F. Guyot (2009) Transformation of vivianite by anaerobic nitrate-reducing iron-oxidizing bacteria. *Geobiology*, 7, 373-384.
30. **Benzerara K.**, N. Menguy (2009) Looking for traces of life in minerals. CR Palevol, 8, 617-628.
31. Miot J., **K. Benzerara**, M. Obst, A. Kappler, F. Hegler, C. Bouchez, F. Guyot, G. Morin. (2009) Extracellular iron biomineralization by photoautotrophic iron-oxidizing bacteria. *Applied and Environmental Microbiology*, 75, 5586-5591.
32. Lepot K., **K. Benzerara**, G.E. Brown Jr., P. Philippot (2009) Organic matter heterogeneity in 2.72 Ga stromatolites: alteration versus preservation by sulphur incorporation, *Geochimica Cosmochimica Acta*, 73, 6579-6599.
33. Lepot K., P. Philippot, **K. Benzerara**, G.Y Wang (2009) Garnet-filled trails associated with carbonaceous matter mimicking microbial filaments in Archaean basalt. Geobiology, 7, 1-10.
34. Obst M., J.J. Dynes, J.R. Lawrence, G.D.W. Swerhone, **K. Benzerara**, C. Karunakaran, K. Kaznatcheev, T. Tyliszczak, A. P. Hitchcock (2009) Precipitation of amorphous CaCO3 (aragonite-like) and by cyanobacteria: a STXM study of the influence of EPS on the nucleation process. *Geochimica Cosmochimica Acta*, 73, 4180-4198.
35. Javaux E.J., **K. Benzerara** (2009) Microfossils. CR. Palevol, 8, 605-615
36. Bernard S., O. Beyssac, **K. Benzerara**, N. Findling, G. Tzvetkov, G.E. Brown Jr. (2010) XANES, Raman and XRD study of anthracene-based cokes and saccharose- based chars. submitted to high temperature pyrolysis. *Carbon*, 48, 2506-2516.
37. Bernard S., **K. Benzerara**, O. Beyssac, G.E. Brown Jr. (2010) Multiscale characterization of

pyritized plant tissues in blueschist facies metamorphic rocks. *Geochim. Cosmochim. Acta*, 74, 5054-5068.

38. Gómez F, Moreira D, **Benzerara K**. and López-García P. (2011) Solenicola setigera is the first characterized member of the abundant and cosmopolitan uncultured marine stramenopile group MAST-3. *Environmental Microbiology*, 13, 193-202
39. Carlut, J., **K. Benzerara**, H. Horen, N. Menguy, D. Janots, N. Findling, A. Addad, and I. Machouk (2010), Microscopy study of biologically mediated alteration of natural mid- oceanic ridge basalts and magnetic implications, *J. Geophys. Res*., 115, G00G11, doi:10.1029/2009JG001139.
40. Janiszewska K, Stolarski J, **Benzerara K**, Meibom A, Mazur M, Kitahara M.V. and Cairns S.D. (2011) A unique skeletal microstructure of the deep-sea micrabaciid scleractinian corals. *Journal of Morphology*, 272, 191-203
41. **Benzerara K**., Jennyfer Miot, Guillaume Morin, Feriel Skouri-Panet, Céline Férard (2011) Significance, mechanisms and environmental implications of microbial biomineralization, *C.R. Geoscience* 343, 160-167
42. **Benzerara K.**, N. Menguy, M. Obst, J. Stolarski, M. Mazur, T. Tylisczak, G. E. Brown Jr., A. Meibom (2011) Study of the crystallographic architecture of corals at the nanoscale by scanning transmission x-ray microscopy and transmission electron microscopy. *Ultramicroscopy* 111,1268-75.
43. Miot J., K. MacLellan, N. Boisset, **K. Benzerara** (2011) Preservation of protein globules and peptidoglycan in the mineralized cell wall of nitrate-reducing iron(II) oxidizing bacteria: a cryo-electron microscopy study. *Geobiology*, 9, 459-470.
44. Mondani L., **K. Benzerara**, M. Carrière, R. Christen, Y. Mamindy-Pajany, L. Février, N. Marmier, W. Achouak, P. Nardoux, C. Berthomieu, V. Chapon. Influence of uranium on bacterial communities: a comparison of natural uranium-rich soils with controls. *PlosOne, 6, e25771.*
45. Lepot K., **K. Benzerara**, P. Philippot (2011) Biogenic versus metamorphic origins of diverse microtubes in 2.7 Gyrs old volcanic ashes: multi-scale investigations. *Earth Planet. Sci. Lett., 312, 37-47.*
46. Couradeau E., **K. Benzerara**, D. Moreira, E. Gérard, J. Kazmierczak, R. Tavera & P. López-García (2011) Prokaryotic and eukaryotic community structure in field and cultured microbialites from the alkaline lake Alchichica (Mexico). *PLosOne,* 6, e28767
47. Boulard E., N. Menguy, A.L. Auzende, **K. Benzerara**, H. Bureau, D. Antonangeli, A. Corgne, G. Morard, J. Siebert, J.P. Perrillat, F. Guyot and G. Fiquet (2012) Experimental investigation of the stability of Fe-rich carbonates in the lower mantle. *Journal of Geophysical Research - Solid Earth,* 117, B02208.
48. Galvez Matthieu E., Beyssac O., **Benzerara K.**, Bernard S., Menguy N., Cox S.C., Martinez I., Johnston M.R., Brown G.E., Jr. (2012) Morphological preservation of carbonaceous plant fossils in blueschist metamorphic rocks from New Zealand. *Geobiology,* 10, 118–129.
49. Pantke C., M. Obst, **K. Benzerara,** G. Morin, G. Ona-Nguema, U. Dippon, A. Kappler.(2012) Green rust formation during Fe(II) oxidation by the nitrate-reducing Acidovorax sp. strain BoFeN1. *Env. Sci. Technol.,* 46, 1439-1446.
50. Couradeau E., **Benzerara K**., Gérard E., Moreira D., Bernard S., Brown Jr. GE., López- García P. 2012. An early-branching microbialite cyanobacterium forms intracellular carbonates. *Science*, 336, 459-462.
51. Galvez M.E., Beyssac O., **Benzerara K**., Menguy N., Bernard S., Cox S.C. (2012) Micro- and nano-textural evidence of Ti(–Ca–Fe) mobility during fluid–rock interactions in carbonaceous lawsonite-bearing rocks from New Zealand. *Contributions to Mineralogy and Petrology*, 164, 895-914.
52. Cosmidis, J.; **Benzerara, K.**; Gheerbrant, E.; et al. (2013) Nanometer-scale characterization of exceptionally preserved bacterial fossils in Paleocene phosphorites from Ouled Abdoun

(Morocco). *Geobiology*, 11, 139-153.
53. Jittawuttipoka T., Planchon M., Spalla O.; **Benzerara, K**, Guyot, F, Cassier-Chauvat C, Chauvat, F (2013) Multidisciplinary Evidences that Synechocystis PCC6803 Exopolysaccharides Operate in Cell Sedimentation and Protection against Salt and Metal Stresses. *PLOS ONE*, 8, e55564
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55. Gerard E., Menez B., Couradeau E., Moreira D., **Benzerara K**., Tavera R. and López- García P. (2013) Three-dimensional Raman and fluorescence imaging reveal specific carbonate-microbe interactions in modern microbialites. *ISME J*. doi:10.1038/ismej.2013.81
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Articles soumis

Colombet J, Billard H, Viguès B, Balor S, Boulé C, Geay L, **Benzerara** K, Menguy N, Sime-Ngando T. Nanosized self-replicating entities in pelagic environment: an overlooked form of life? ISME j

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Livres et Chapitres de livre

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2. **Benzerara K.**, A. Meibom, Q. Gautier, J. Kaźmierczak, J. Stolarski, N. Menguy, and G.E. Brown, Jr. (2010) Nanotextures of aragonite in stromatolites from the quasi-marine Satonda crater lake, Indonesia. *From* Pedley, H.M. and Rogerson, M. (eds) Tufas and Speleothems: Unravelling the Microbial and Physical Controls. Geological Society, London, Special Publications, 336, 211-224.
3. Cosmidis J. and **Benzerara K.** (2014) Soft x-Ray Scanning Transmission Spectro- Microscopy *in* Biomineralization Sourcebook: Characterization of Biominerals and Biomimetic Materials. Elaine DiMasi; Laurie B. Gower (eds.). CRC Press.
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8. Benzerara K, Bernard S and Miot J (2018) “Mineralogical identification of traces of life”, in

Biosignatures for Astrobiology (Eds B Cavalazzi and F Westall, Springer).

9. Zeyen N., Benzerara K. "Modern and Fossil Stromatolites". In Importance of prokaryotes in the functioning and evolution of the present and past geosphere and biosphere, Prokaryotes and evolution, Bertrand J.-C., Brochier-Armanet C., Normand P., Sime-Ngando T. (eds), 2018

Articles dans Encyclopédie d'Astrobiology

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Acte de colloque avec review

Brown G.E., Jr., Templeton A.S., Trainor T.P., Spormann A.M., Yoon T.H., and **Benzerara K**. (2004) Synchrotron-based studies of microbe-metal ion-mineral interactions. Water-Rock Interaction.Proc. 11 th Internat. Symp. on Water-Rock Interaction, Saratoga Springs, NY, USA, R.B. Wanty and R.R. Seal II, Eds., Taylor & Francis Group, London, p. 1069-1077

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K. **Benzerara**, E. Couradeau, E. Gérard, R. Tavera, A. I. Lopez-Archilla, D. Moreira and P. Lopez-Garcia (2014) Geomicrobiological study of modern microbialites from Mexico: towards a better understanding of the ancient fossil record. DOI: http://dx.doi.org/10.1051/bioconf/20140202002. In BIO Web of Conferences. Vol. 2 (2014)

Zeyen N, Daval D, Lopez-Garcia P, Moreira D, Gaillardet J, **Benzerara K**. Geochemical conditions allowing the formation of modern lacustrine microbialites. Extended abstract for the 15th Water-Rock Interaction International Symposium.

Invited Talks congrès interntionaux

1. BENZERARA K., "Search for life in rocks and influence of rocks on life" *International Space Science Institute (ISSI)*, Workshop on "Geology and Habitability of Terrestrial Planets" Berne, 09/2005

2. BENZERARA K., « Study of bio-mineral interactions by transmission electron microscopy (TEM) and scanning transmission X-ray microscopy (STXM)" *The Mineralogical Society winter meeting*, Micro- to nano-geosciences, developments and applications, Bath Spa, 01/2006

3. BENZERARA K., "Identification of microbial signatures within human calcifications using spectromicroscopy", *Meeting of the American Society for Experimental Biology*, San Francisco, USA, 04/2006

4. BENZERARA K., "Study of interactions between microbes and minerals by scanning transmission X-ray microscopy (STXM)" *13th International Conference on X-ray Absorption Fine Structure (XAFS13)*, Stanford (CA), 07/2006

5. BENZERARA K., "Study of bio-carbonates at the nanoscale in natural samples", *American Chemical Society Conference*, San Francisco, 09/2006

6. **BENZERARA K.,** "Search for the first traces of life", *Colloque international "Evolving Life, Life Evolving" (ELLE)* Namur, 12/2006
7. **BENZERARA K**., "Impact of microbes on Fe redox cycle in the environment" Workshop on STXM and X-ray Nanoprobe Capabilities and Needs for Geo-, Environmental, and Biological Sciences. *Stanford Synchrotron Radiation Laboratory*, 07/2007
8. **BENZERARA K.**, "X-Ray microscopy study of microbial fossils", *Users' meeting of the Swiss Light Source*, Villigen, 09/2007
9. **BENZERARA K**., "STXM-based study of microbial fossils in recent and ancient rocks", Goldschmidt Conference, Vancouver, 07/2008
10. **Benzerara K**., Meibom A, Lopez-Garcia P., J. Kazmierczak, G.E. Brown JR "Study of Mineral-Microbe Assemblages Down to the nm-Scale in Carbonate Microbialites", Symposium on Calcification processes and microbes. Goldschmidt Conference, Davos, 06/2009
11. **Benzerara K**, Miot J, Obst M, Kappler A, Hegler F, Guyot F & Morin G. "Study at the Nanoscale of Iron Biomineralization on Organic Fibres by a Phototrophic Iron-Oxidizing Bacterium" Invited. Goldschmidt conference, Knoxville, 06/2010
12. **Benzerara**, L. Mondani, J. Cosmidis, V. Chapon, J. Miot, A. Kappler, G. Morin. Invited « Open questions on the significance, mechanisms and environmental implications of microbial biomineralization involved in metal and radionucleide sequestration" EGU, Vienne, 04/2011
13. **K. Benzerara**, E. Couradeau, E. Gérard, D. Moreira, P. Lopez-Garcia Invited "Study of Mg- and Ca-carbonate precipitation by laboratory cultivated microbialites". EGU, Vienne, 04/2011
14. **K. BENZERARA**, O. BEYSSAC, M. GALVEZ, S. BERNARD, J. COSMIDIS. Invited "An experimentalist call to theoreticians about XANES spectra theoretical simulation at the C K-edge, Ca and Fe L2,3 edges" Goldschmidt, Prague, 08/2011
15. **Benzerara K**., Cosmidis J., Li JH., Miot, J., Couradeau, E. Keynote "Biominberalization and fossilization of bacteria: what do we learn from field and experimental studies" Geological Society of America, Charlotte, 11/2012.
16. **Benzerara K**., Skouri-Panet F., Ragon M., Férard C., Li J., Moreira D, Lopez-Garcia P, Gugger M, Keynote "Intracellular calcification by cyanobacteria: a significant controlled biomineralization process". Joint DMG-GV conference, Tuebingen, 09/2013.
17. **Benzerara K**, Cosmidis J; Miot J, Morin G, Pantke C, Obst M, Kappler O, Busigny V, Jezequel D, Lebeau O. Invited "Spectromicroscopy study of Fe-oxidizing bacteria in nature and in the laboratory: What do we learn about the mechanisms of Biomineralization". Monte Verita Conference, Ascona, Switzerland, 03/2013.
18. **Benzerara K**, Cam N, Cosmidis J, Duprat E, Li J, Lopez-Garcia P, Moreira D, Saghaï A, Skouri-Panet F & Zeyen N. Keynote "Microbial Calcification in the Rock Record: Learning from Field- and Laboratory-Based Studies Down to the nm-Scale". Goldschmidt Conference, Yokohama, Japon, 08/2016.
19. **Benzerara K**. "Formation of minerals by bacteria: diversity, mechanisms and implications for the fossil record", Geomicrobiology Workshop "Building a Habitable Earth", Tubingen, Allemagne, 05/2016.
20. **Benzerara K**, Duprat E, Miot J, Rivas S, Trcera N, Jezequel D, Viollier E, Férard C, Skouri-Panet F, Poinsot M, Lefevre C. "Some connections between the P and Fe cycles in Lake Pavin, France", Telluride Workshop "Biogeochemistry and Redox Transformations of Iron", Telluride, USA, 08/2016
21. **Benzerara K**, Bitard-Feildel T, Blondeau M, Cam N, Caumes G, Coutaud M, Gorgen S, Dewever A, Diop IS, Callebaut I, Cassier-Chauvat C, Dezi M, Duprat E, Ferard C, Gugger M, Lopez-Garcia P, Moreira D, Poinsot M, Sachse M & Skouri-Panet F. "Cyanobacterial Intracellular Carbonatogenesis: Phylogenetic Distribution, Mechanisms and Environmental Implications", F. Earl Ingerson Lecture (awared by the Geochemical Society), Goldschmidt 2017, Paris, 08/2017.
22. **Benzerara K**, Geobiology Gordon Conference on "The Microbial Planet from Deep Time to Today", Mineral-Microbe Interactions, Galveston, Texas, 01/2018.
23. **Benzerara K,** „The role of non-ureasic microorganisms in kidney stone formation". 1st workshop oft he Medical Geology Association (IMGA), Annecy, 03/2018

Invited talks congres nationaux

Benzerara K., « Utilisation de la microscopie X mous pour l'étude des assemblages microorganismes-minéraux », Synchrotron Soleil, workshop « Microscopies et Imageries dans le Domaine X-Mous à Soleil », Palaiseau, 04/2005.

Benzerara K., « Mécanismes de biominéralisation et biosignatures minéralogiques » Workshop Exobio, Propriano (Corse) 09/05

Benzerara K., S. Bernard, K. Lepot, J. Miot, O. Beyssac, A. Meibom and G.E. Brown, Jr (pleinière) « Spectromicroscopy by Soft X-ray STXM in Geosciences ». Invited Talk., *Réunion des Sciences de la Terre*, Nancy, 04/2008

Benzerara K (pleinière) « Etude minéralogique des stromatolithes modernes et anciens : évolution au cours des ères géologiques et compréhension des mécanismes d'interaction microorganismes-minéraux » Journées thématiques de l'Association Française d'Ecologie Microbienne, 05/2010.

Benzerara K (pleinière) "Use of soft-x-ray scanning transmission x-ray microscopy (STXM) in Earth and Environmental sciences: a new insight at the submicrometer scale" User's meeting @SOLEIL, 01/2011.

Benzerara K, Zeyen N, Li J, Groleau A, Lopez-Garcia P, Moreira D. (pleinière) « Etude de la biominéralisation dans des microbialites carbonatés actuels du Mexique : Processus de fossilisation et rôle du vivant vs. de l'environnement dans leur formation ». 14e congrès français de sédimentologie, 11/2013.

Benzerara K, Cosmidis J, Duprat E, Férard C, Skouri-Panet. Invité. « Mechanisms of calcification by bacteria: a laboratory study ». Journée « calcifications pathologiques », college de France, 09/2013.

Benzerara K. Invite. « Study of mineral-microbe interactions by soft x-ray scanning transmission x-ray microscopy (STXM)". JEELS 2014, Roscoff, 06/2014.

Benzerara K. Conférence invitée. « Mécanisme de génération des carbonates par activité bactérienne ». Workshop « Dépots-biofilms-entartrage : passage du préventif au curatif » organisé par Hydreos (pôle de l'eau Alsace et Lorraine), 09/2014

Benzerara K, Skouri-Panet F, Livrozet M, Letavernier E, Daudon M, Cosmidis J, Duprat E (plénière) "Study of microbial Ca-phosphate biomineralization: combining mineralogy, geochemistry and molecular biology". Journées Françaises de Biologie des Tissus Minéralisés, 06/2016

Benzerara K, Duprat E, Miot J, Skouri-Panet F, Guyot F, Lopez-Garcia P, Moreira D « Role of bacterial diversity in the formation of minerals». Colloque Recherches Bio-Inspirées, MNHN, 12/2015

Benzerara K « La formation de minéraux carbonatés par les cyanobactéries: mécanismes et implications environnementales et géologiques». Colloque du réseau des laboratoires de microbiologie de Sorbonne Universités (MTE), 05/2017

Benzerara K « The formation of minerals by bacteria ». Journée scientifique du programme doctoral Interfaces Pour le Vivant, 04/2017.

Benzerara K « Les interactions mineral/vivant : mécanismes, conséquences et recherche de traces de vie anciennes ». Conférence de rentrée de l'ED GRNE, 11/2016.

Benzerara K, « Utilisation des rayons X pour l'étude des interactions entre micro-organismes et minéraux ». Conférence plénière de la 32eme édition de la journée du club des utilisateurs de PANalytical, 06/2017.

Benzerara K, „La formation de minéraux phosphatés par les bactéries". 22èmes confrontation clinico-biologiques sur la lithiase urinaire- Journée de la société de Physiologie, 10/2017

Session organisées dans des conférences

- Symposium at the European Geophysical Union (2005-2006 and 2012), Vienna (Austria)
- Symposium at the Goldschmidt conference (2009), Davos (Switzerland)
- Symposium at the International Mineralogical Assoc. meeting (2010), Budapest (Hungary)
- Two symposia at the Goldschmidt conference (2011), Prague (Czech Republic)

- Symposium at the European mineralogical conference (2012), Frankfurt (Germany)
- Organization of theme 10 (Interfaces from the nano to macro scales) at the 2013 Goldschmidt (Fiorenze, Italy)
- Two symposia at the Goldschmidt conference (2015), Prague (Czech Republic)
- Symposium at the Goldschmidt Conference (2017), Paris (20c)
- Organization of theme 08 (Nano to microscale processes in geochemistry) at the 2017 Goldschmidt (Paris)
- Organization of the symposium S6 Biominerals through time: evolution, taphonomy and traces in the geological record at the 5th international palaeontological congress (2018), Paris

Ecoles internationales

- **European Intensive Seminars of Petrology** (EURISPET), "Use of Scanning Transmission X-Ray Microscopy in Petrology, Theory and Applications", Paris (France), October 2007
- **Higher European Research Course for Users of Large Experimental Systems** (HERCULES) "Low energy spectro-microscopies, principles and applications", ESRF synchrotron, Grenoble (France) May 2008.
- **Synchrotron School on X-ray Microscopy** (SOLEMIO) Palaiseau, May 2011
- **Tools in Environmental Biogeochemistry** - Opportunities and Limitations, "Transmission Electron Microscopy", Tuebingen, Aout 2011
- **Mineral and Processes,** "Innovative techniques for the study of mineral-biosphere interaction"**,** Pisa, Septembre, 2011
- **The Lyon Spring School on Early Life (LIO)**, "Cyanobacteria and stromatolites" Juin 2012
- **Course on Calcium phosphates and biomineralization**: manifold interaction, « Mechanisms of calcification by bacteria », Campus des Cordeliers (Paris), Decembre 2013
- **International School of Biological Crystallization**, "Biomineralization of intracellular alkaline earth carbonates by cyanobacteria: significance, mechanisms and implications" Granada (Espagne), Mai 2015
- **European Summer School on the Physics of Living Matter**, "Origins of life", Strasbourg, 07/2016
- **Astrobiology Introductory Course** (RED'17) « Co-evolution of Earth and life", Le Teich, 03/2017 conférencier invite, https://www.youtube.com/watch?v=MJjsDkzzQwo
- **Geomicrobiology and Biomineralization CUSO doctoral school activity** "Carbonate biomineralization by bacteria, Neuchatel, 04/2018

Encadrements

PhD

- Kevin Lepot «Fossils of Archean microbial activity», 2004-2007. Now Assist Prof at Univ. Lille
- Sylvain Bernard "Preservation of organic fossils during diagenesis and metamorphism" 2005-2008. *Awards from SFMC (Mineralogical society of France) and FFG (French Federation of Geology) for best thesis.* Now CNRS scientist at the MNHN.
- Jennyfer Miot "Microbial biomineralization and detoxification of metals" 2005-2008. Now assistant professor at the National Museum of Natural History.
- Matthieu Galvez: "Fate of organic carbon in metamorphic rocks", 2008-2011; Now postdoc at ETH Zurich, Branco Weiss Fellow.
- Estelle Couradeau: "Geomicrobiology of Alchichica microbialites (Mexico)", 2008-2012; now postdoc at UC Berkeley
- Julie Cosmidis: "Bacterial biomineralization of Ca-phosphates and formation of phosphorites", 2010-2013. *Awards from SFMC (Mineralogical society of France) for best thesis.* Now Assistant Prof PennState U
- Nithavong Cam: "Biomimetic synthesis of Mg-, Sr-, Ba- and Ca-carbonates", Labex Matisse, 2012- Nov 2015. Now postdoc at CEREGE.
- Nina Zeyen: "Fossilization of cyanobacteria », ERC Calcyan, 2013-2016. Now Postdoc University of Alberta.

- Sara Rivas: “Role of bacteria in the geochemical cycle of Phosphorus”, 2013-2017. Now ATER UPMC.
- Marine Livrozet: “Role of phosphatases in the formation of kidney stones”, Hopital Tenon-IMPMC, 2014-2018. Now médecin néphrologue à l’Hopital Tenon.
- Alexis DeWever : “Biomineralisation of Mg-silicates by bacteria: experimental and field study”, Bourse concours de l’ED GRNE, UPMC, 2016-.
- Sigrid Görgen : “Génétique de la biominéralisation intracellulaire chez les cyanobactéries”, Bourse du programme Interdisciplinarité pour le Vivant, UPMC, 2017-.

Foreign PhD students

- Miguel Iniesto, UAM, Madrid, Spain. Stay of 4 months (2013) at IMPMC in Paris in a collaborative framework. Now postdoc in Orsay.
- Steffi Rothhardt, Jena University. Stay of 3 months (2013) at IMPMC in Paris in a collaborative framework. Now PhD program coordinator at the Max Planck Institute in Jena.
- Marilene Leao, Universidado do Estado do Rio de Janeiro. Stay of 3 months (2015) + 6 months (2017) at IMPMC. Current

Postdocs

- Jinhua Li. Fondation del Duca puis ERC Calcyan. 2012-2014. Now Associate Professor Chinese Academy of Sciences
- Franck Bourdelle. Fondation del Duca. 2013. Now MCF University Lille
- Marie Ragon. ERC Calcyan, 2013. Now Engineer Orsay
- Adrienne Kish, ERC Calcyan, 2013. Now MCF at MNHN Paris
- Marjorie Etique, ERC Calcyan 2014-2015. Now Postdoc at ETH Zurich
- Marine Blondeau, ERC Calcyan, 2015-2017. Now ingénieur d’étude en environnement en sites et sols pollués au BURGEAP.
- Isabel Margaret Oliver, ERC Calcyan, 2013-2016. Now maternity leave
- Margot Coutaud, ERC Calcyan, 2016-
- Géraldine Caumes, ingénieur CDD, ERC Calcyan, 2016-
- Michaël Hermoso, Labex Matisse avec F. Minoletti, 2017-

Master

- Quentin Gautier, M2 Géochimie IPGP, 2007
- Matthieu Galvez, M2 AIV Paris Descartes, 2008.
- Mary Grossmann, M1 SDUEE UPMC, 2009
- Elodie de Peretti, M2 AgroParisTech, 2009
- Julie Cosmidis, M2 IPGP, 2010
- Sébastien Dutreuil, M2 AIV Paris Descartes, 2011
- Nina Zeyen, M2 IPGP, 2013
- Elise Pellerin, M1 SDUEE UPMC, 2014
- Géraldine Caumes, M2 Biologie-Informatique Paris Diderot, 2015
- Alexis De Wever, M2 Microbiologie Rennes, 2016
- Sigrid Görgen, M2 MNHN, 2017
- Sarah Figowy, M1 Geol UPMC, 2017
- Cyrielle Marciano, M2 Géochimie UPMC, 2018

Licence 3eme année

- Camille Bouchez, ENS Lyon 2008
- Fatma Rostom, ENS Lyon 2011
- Julien Moussou, ENS Paris, 2012
- Matthias Maillot, UPMC, 2012
- Jean-Baptiste Wacheul, ENS Paris 2012

Jury de these (rapporteur indiqué par *)

- Céline Chadefaux « Etablissement d'une nouvelle stratégie analytique multiéchelle de détermination de l'état de conservation des os et bois de cervidés archéologiques », LC2RMF (Louvre), Examinateur, 06/2009.
- *Kamal Kolo, Univ. libre Bruxelles, 06/2009.
- *Saskia Binschedler, "The role of Fungi in the precipitation of calcite", Univ. Lausanne, 02/2011
- *Florian Hegler, "Microbial Fe(II) oxidation: cell-mineral interactions and implications for modern and ancient environments" Université Tuebingen, 02/2011.
- *Caroline Avril, "Etude minéralogique fine des matériaux et de leurs bioaltérations: implications sur les chondrites à enstatite", Université Paris Est, 09/2011
- *Gilles Montagnac, « Spectroscopie Raman résonnante UV in situ à haute température ou haute pression » ENS Lyon, 12/2012
- Anne Michelin, « Altération pluriséculaire des systèmes Verre/Fer en milieu anoxique : apport des analogues archéologiques à la compréhension des mécanismes », CEA Saclay, 09/2012
- *Ange Le Boudec, « Nouvelles méthodes d'extraction du molybdène et géochimie d'un grand gisement fossilifère Cambrien, le Lagerstatte de Sirius Passet », ENS Lyon, 02/2013
- *Romain Lafay, « Séquestration des éléments mobiles durant la serpentinisation expérimentale en condition alcaline », Grenoble, (K Benzerara)
- *Marjorie Etique, « Effets de l'activité bactérienne réductrice du fer ferrique et des nitrates sur les transformations des produits de corrosion magnétite et sidérite de l'acier non allié », Univ. Nancy. 11/2014
- *Jonathan Perrin, « Structure et squelettogenèse chez le genre Corallium », Aix-Marseille. 11/2014
- Pauline Henri, «Etude de l'atération précoce des verres basaltiques par les microorganismes en contexte hydrothermal océanique : Exemple du site de Lucky Strike (dorsale Médio-Atlantique, 37°N) », IPGP, 01/2015
- *Anne Perez, « Bioaltération de verres basaltiques modèles : impact des siédérophores et rôle du fer », Université Paris Est, 11/2015
- *Astrid Avellan, « Relation entre structure réactivité et interactions cellulaires de nantubes inorganiques ; cas des imogolites », CEREGE. (K Benzerara)
- *Aurélie Pace, « Structures et processus de minéralisation et de diagenèse des tapis microbiens actuels en domaines hypersalins continental et marin », Université Bordeaux Montaigne, 09/2016.
- *Bastien Wild, „Changements microstructuraux et diversité microbienne associés à l'altération des silicates : Influence sur les cinétiques de dissolution du laboratoire au terrain", Univ Strasbourg, 02/2017
- *Jaison Arivalagan, „Insights from shell proteome: biomineralization control and environmental adaptation in bivalves", MNHN, 09/2017
- *Stellina Lekele Baghekema, „Etude multi-proxies et multi-scalaires des roches siliceuses (cherts) du bassin de Franceville (2,1Ga) : origine et processus de formation", Univ Poitiers, 06/2017
- *Elodie Descamps, „les determinants environnementaux et genetiques controlant la biomineralisation chez les bacteries magnetotactiques", Université Aix-Marseille, 02/2018
- *Wafa M Kooli, „Bacterial iron reduction and biogenic mineral formation for the stabilization of corroded iron objects", Université de Neuchatel (Suisse), 04/2018
- *Alexandre Fadel, „Micro et nanoanalyses des microfossiles du Protérozoïque et de tapis microbiens fossiles", Université de Lille, 06/2018
- Adam Panagiotis, „Life before oxygen: linking phylogenomics and palaeogeochemistry to unravel the nature and function of microbiota in the early Archean" Institut Pasteur, 10/2018

<u>Jury d'HDR (rapporteur indiqué par *)</u>

- *Marc de Rafélis, „Etude des porteurs du signal géochimique environnemental: des bivalves du domaine néritique au plancton carbonaté du domaine pélagique. Approches sédimentologique, géochimique et biologique", UPMC, 11/2011

- *Corinne Chevallard, « Systèmes modèles de la biominéralisation carbonatée », CEA Saclay, 10/2015
- *Mélanie Auffan, « mecanismes bio-physico-chimiques des interactions entre des nanomateriaux et le vivant : une approche interdisciplinaire et multi-echelles », CEREGE, 02/2016
- *Catherine Lehours, „Diversité, potentialités et flexibilité métabolique du monde microbien: perspectives écologiques“, Clermont-Ferrand, 04/2016
- Céline Rommevaux, « Colonisation et latération des roches océaniques à laxe des dorsales lentes par les microorganismes: influence des conditions environnementales », IPGP, 05/2017
- Damien Daval, « Empreintes physicochimiques et microstructurales associées à l'altération des minéraux : de la modélisation des figures de dissolution à l'élaboration de critères de biogénicité ? », Université Strasbourg, 10/2018

Conférence grand public

• Organisation d'un stand pour la Fête de la science au village des sciences du Jardin du Luxembourg, stand CNRS (*Observons la matière à toutes les échelles*), 2005.

• Conférence pour le grand public sur le site Boucicaut de l'université de Paris 6 (IMPMC) : *« Des minéraux et des Bactéries », 2005.*

• Organisation et animation d'un stand pour la fête de la science sur le site Boucicaut de l'université Paris 6 (IMPMC): *« Des bactéries, des aimants et la vie sur Mars », 2006*

• Organisation d'un stand pour la fête de la science à l'IPGP : *« Dépolluer des sols et des rivières avec des bactéries »,* 2006.

• Intervenant pour la Science Académie auprès de jeunes défavorisés (Juillet 2008)

• Café des sciences Combs la Ville (Octobre 2009) sur les origines de la vie

• 16eme journée de l'École Doctorale Sciences de la Vie, de la Santé, Agronomie et Environnement de Clermont-Ferrand « La quête des toutes premières traces de vie sur Terre et ailleurs », Mai 2013; Invité d'honneur.

• Les débuts de la vie / Rencontres géosciences de la SGF, Novembre 2013 « La quête des premières traces de vie sur Terre et ailleurs » Invité.

• Conférence invitée dans le cadre de l'ouverture de l'année de la cristallographie en France en collaboration avec l'UNESCO et l'IUCr « Le cristal et le Vivant : rencontre de la cristallographie et de la microbiologie », Janvier 2014. http://www.dailymotion.com/video/x1bnola

Articles vulgarisation

• **Benzerara K**. « Nanobactéries une nouvelle forme de vie ? » La Recherche, 2008, 417, 54-57.

• **Benzerara K**. « La quête des toutes premières traces de vie » La Recherche, 2011, 456, 50-54.

• **Benzerara K**., Miot K., Morin G. « Comment certaines bactéries oxydent le fer en l'absence de dioxygène : Implications pour l'environnement et la recherche de traces de vie ancienne ». L'actualité chimique, 2011, 356-357, 102-104.

• Contributions: „Voyage aux sources du vivant“, Sciences et Avenir Janv/Fev 2017; „Vent nouveau sur le „boom de l'oxygène“, Sciences Actualités, cité des sciences, Oct 2013; „Une fabrique minérale intracellulaire“, Sciences et Avenir, 04/2012; „Découverte d'une espèce de bactérie fabriquant des minéraux intracellulaires“, La Recherche, 05/2012.

Cours en ligne

Radiochronologie Archéenne (2012) https://www.youtube.com/watch?v=Oz0FoEgEzK4
Processus de Fossilisation (2012) https://www.youtube.com/watch?v=Ail4THUGP4M
Lecture on Stromatolites (2012) https://www.youtube.com/watch?v=W_tco4PE_Uo
Lecture on Electron Microscopy (2012) https://www.youtube.com/watch?v=rhofcGI2PTw&t=18s

Lecture on Iron Biomineralization (2011) https://www.youtube.com/watch?v=mxY7imRkNkY
Mécanismes de formation de phosphate de calcium par des bactéries (2016) http://www.college-de-france.fr/site/clement-sanchez/symposium-2016-02-18-14h30.htm
Co-evolution of Earth and Life (2017) https://www.youtube.com/watch?v=MJjsDkzzQwo

Talks/posters (without invited/keynote)

"Microscopic and Spectroscopic Characterization of Calcified Microorganisms at the Nanometer-Scale in Experimental and Field Samples". **Benzerara, K**, Yoon, T, Menguy, N, Tyliszczak, T, Brown, G.E. *American Geophysical Union Fall Meeting*, 12/2004.

"Silicate-carbonate-microorganism interface studied by high resolution TEM and electron energy loss spectroscopy" Menguy N., **Benzerara K**., Guyot F., Vanni C. *American Geophysical Union Fall Meeting*, 12/2004.

"The Role of Organic Molecules and Microbial Organisms in Metal Ion Sorption Processes": G.E. Brown Jr., T.H. Yoon, S.B. Johnson, A.S. Templeton, T.P. Trainor, **K. Benzerara**, B.C. Bostick, T. Kendelewicz, C.S. Doyle, and A.M. Spormann. *American Chemical Society*, San Diego, 03/2005.

"Soft X-ray Spectromicroscopy Study of Carbonaceous Materials: Characterization of Their Chemical Heterogeneities in Sub-micrometer Scale" T.H. Yoon, **K. Benzerara**, S. Ahn, R. G Luthy, T. Tyliszczak, and G.E. Brown Jr. *American Chemical Society*, San Diego, 03/2005.

"Scanning transmission X-ray microscopy and TEM study of microbial calcium phosphate biomineralization" **K. Benzerara**, T.H. Yoon, N. Menguy, T. Tyliszczak, F. Guyot, and G.E. Brown Jr. *American Chemical Society*, San Diego, 03/2005

"Microbial Diversity and Spectroscopic Study of the Aragonite Microbialites from the Alkaline Lake Van (Turkey)" P. López-García, **K. Benzerara**, N. Menguy, J. Kazmierczack, F. Guyot and D. Moreira, *European Geosciences Union general assembly*. Vienna, 04/2005.

"Combination of STXM and TEM to study geomicrobiological samples". Poster. **K. Benzerara**, T.H. Yoon, N. Menguy, and G.E. Brown, Jr. *European Geosciences Union general assembly*. Vienna, 04/2005.

"Nanoscale environments associated with bioweathering of a Mg-Fe-pyroxene" **K. Benzerara**, T.-H. Yoon, N. Menguy, F. Guyot, T. Tyliszczak, G. E. Brown, Jr. *Goldschmidt conference*, Moscow (IDA), 05/2005.

"Soft X-ray spectromicroscopy study of chemical heterogeneities in iron precipitates formed at or near bacterial cells" TH Yoon, T. Borch, **K. Benzerara**, S. Fendorf, T. Tyliszczak, G.E. Brown, Jr. *Goldschmidt conference*, Moscow (IDA), 05/2005

"A structural view of carbonate biomineralization by bacteria". F. Guyot, **K. Benzerara**, N. Menguy. Session Crystallography and Environmental Science. *20th Congress of the International Union of crystallography*. Florence, 08/2005

"Multi-element Distributions at Organic Film-Mineral and Biofilm-Mineral Interfaces: Long-period X-ray Standing Wave (XSW) study". Talk. T.H. Yoon, **K. Benzerara**, T.P. Trainor, P.J. Eng, G.E. Brown Jr. (2005). *230th ACS National Meeting*, Washington, DC, 08/2005.

"Nanoscale study of As and Fe redox transformations by bacteria in acid mine drainage". Poster. **K. Benzerara**, G. Morin, T.H. Yoon, J. Miot, C. Casiot, F. Farges, and G.E. Brown, Jr. *European Geosciences Union general assembly*. Vienna, 04/2006.

"Multiple Length scales characterization of morphologically perfectly preserved Triassic lycophyte spores after HP-BT metamorphism" Poster. Bernard S, **Benzerara K**, Beyssac O, Menguy N, Goffé B, Guyot F, Brown GE, Jr. *European Geosciences Union general assembly*. Vienna, 04/2006.

"On the role of microbes in the alteration of submarine basaltic glass from the Ontong Java Plateau: a TEM and STXM study". Oral. **K. Benzerara**, N. Menguy, N.R. Banerjee, F. Guyot and G.E. Brown, Jr. *European Geosciences Union general assembly*. Vienna, 04/2006.

"Magnetic evidence of bacterial alteration in oceanic basalts". Poster. Horen H, Carlut J, **Benzerara K**, Janot D, Menguy N. *European Geosciences Union general assembly*. Vienna, 04/2006.

"In situ structural and chemical characterization of biogenic organic matter in 2.72 Ga stromatolites, Tumbiana Formation, Western Australia". Oral. K. Lepot, P. Philippot, **K. Benzerara**, M. Cotte. *European Geosciences Union general assembly*. Vienna, 04/2006.

« Géomicrobiologie des microbialites carbonatés du lac alcalin Van, Turquie » **K. Benzerara**, N. Menguy, J. Kazmierczak, D. Moreira, G.E. Brown, Jr., F. Guyot et P. López-García. *Colloque National d'Exobiologie*, Orléans, 05/2006.

Vandenabeele-Trambouze O., Alekina I., Benzerara K., Bulat S., Derenne S., Dobrijevic M., Engrand C., Fortin D., Gargaud M., Javaux E., Mustin C., Pascal R., Petit J-R., Reisse J. Compte rendu de l'atelier Biomarqueurs et Biosignatures. Colloque National d'Exobiologie. Orléans. 22-24 mai 2006.

"Chrysocolla Redefined as Spertiniite" Poster**.** Farges F., **Benzerara K.**, and Brown G.E. Jr. *The 13th International Conference on X-ray Absorption Fine Structure*. Stanford, 07/2006**.**

"Bacterial formation of arsenic iron hydroxysulfates in Acid Mine Drainage". Poster. Morin G, **Benzerara K**, Miot J., Juillot F., Casiot C., Bruneel O., Calas G., Brown Jr. GE. *The 13th International Conference on X-ray Absorption Fine Structure.* Stanford, 07/2006**.**

« Etude expérimentale du rôle des bactéries sulfato-réductrices sur les cycles biogéochimiques du fer et du soufre en contexte océanique » Poster. J. Carlut, H. Horen, **K. Benzerara**, D. Janots, J. Alt. *Biominéralisation, SFMC*, Nancy 07/2006.

"Preservation de spores de lycophytes fossiles dans un métamorphisme de haute pression". Poster. S Bernard, **K. Benzerara**, O Beyssac, N Menguy, F. Guyot, GE Brown et B. Goffé. *Biominéralisation, SFMC*, Nancy 07/2006.

"Applications of synchrotron radiation to processes at environmental interfaces ». Brown GE Jr, **Benzerara K**, Yoon TH, Ha J, Cordova CD, Spormann AM, Tyliszczak T, Tanwar KS, Trainor TP, Eng PJ. *Goldschmidt Conference*, Melbourne, 08/2006

"In-situ characterization techniques used to test thye biogenicity of biomorphic structures in 2.72 Ga pristine drill core samples from the Tumbiana formation, Western Australia". Oral. Lepot K., Philippot P., **Benzerara K**. and Cotte M. *Goldschmidt Conference*, Melbourne, 08/2006

"Preservation of Plant Spores in High-Pressure Rocks: Structural and Chemical Characterization From the mm to the nm Scale". Poster. Bernard S, **Benzerara K**, Beyssac O, Menguy N, Guyot F, Goffe B, Brown GE. *American Geophysical Union Fall Meeting,* San Francisco 12/2005.

"Applications of Scanning Transmission X-Ray Microscopy (STXM) in Environmental and Biological Chemistry". Oral. Yoon TH, **Benzerara K**, Tyliszczak T., Brown GE, Jr. *The IXth International Conference of Synchrotron Radiation instrumentation*, Daegu (Korea), 06/2006

"Soft X-ray spectromicroscopy studies of environmental interfaces." Invited Talk. Brown G.E., Jr., **Benzerara K**., Yoon T.H., Ha J., Cordova C.D., Spormann A.M., Morin G., Calas G., and Tyliszczak T. *American Chemical Society***,** 09/2006, San Francisco.

« Study of Microbe-Mineral Interactions in Carbonate Microbialites by Soft Transmission X-Ray Microscopy (STXM) » Oral. **K. Benzerara**, N. Menguy, P. Lopez Garcia, T Yoon, J. Kazmierczak, T. Tyliszczak, F. Guyot and GE Brown Jr. *The 16th International Microscopy Congress*, Sapporo (Japon), 09/2006.

"Silicate-Carbonate-Microorganism Interface studies by High resolution TEM and EELS spectroscopy ». Oral. N. Menguy, **K. Benzerara**, F. Guyot, C. Vanni. *The 16th International Microscopy Congress*, Sapporo (Japon), 09/2006.

"Search for life in an extraterrestrial rock sample: An astrobiological challenge" Vandenabeele-Trambouze O., Alekina I., **Benzerara K**., Bulat S., Derenne S., Dobrijevic M., Engrand C., Fortin D., Gargaud M., Javaux E., Mustin C., Pascal R., Petit J-R., Reisse J. *6th European Workshop on Astrobiology*, Lyon, 10/2006.

«Are aragonite nanocrystals in modern microbialites biogenic? » Poster. **K. Benzerara**, N. Menguy, P. López-García, J. Kazmierczack, F. Guyot, and G.E. Brown, Jr. *American Geophysical Union Fall Annual Meeting*, San Francisco, 12/2006.

"Nanometer-scale study of microbial alteration textures in submarine basaltic glass". Poster. N.R. Banerjee, **K. Benzerara**, N. Menguy, G.E. Brown, Jr. *American Geophysical Union Fall Annual Meeting*, San Francisco, 12/2006.

"Preservation of Fossilized Biogenic Organic Matter and Associated Biominerals in High Pressure Metamorphic Rocks" Poster. S. Bernard, O. Beyssac, **K. Benzerara**, B. Goffé. *American Geophysical Union Fall Annual Meeting*, San Francisco, 12/2006.

« Utilisation de la spectro-microscopie X (STXM) en géobiologie » Oral. **K. Benzerara**, J. Miot. *Réunion des Sciences de la Terre*, Dijon, 12/2006.

« Utilisation de la spectro-microscopie X (STXM) pour l'étude de l'altération de verres basaltiques par des bactéries ». Poster **K. Benzerara**, J. Miot. *Soleil User's Meeting*, Palaiseau, 01/2007.

"Nanometer-scale study of biomineralization and basaltic glass weathering by anaerobic iron-oxidizing bacteria". Oral. Miot, J., **Benzerara K**., Guyot F., Morin G., Kappler A. *European Geosciences Union General Assembly,* Vienne, 04/2007.

"Molecular diversity of cyanobacteria and other members of the microbial community associated to microbialites from Satonda crater lake, Indonesia". Poster. Q Gautier, **K. Benzerara**, D. Moreira, J. Kazmierczak, F.

Guyot, S. Kempe and P. López-García. *17th Symposium of the International Association for Cyanophyte Research*, Mérida, Yucatán, Mexique, 06/2007.

"Interaction of Organic Molecules and Microorganisms with Mineral Surfaces and Their Impact on Metal Ion Sorption Processes". Keynote Talk. Brown, G.E., Jr., T.H. Yoon, S.B. Johnson, D.M. Singer, J. Haa, Y. Wang, A. Gelabert, **K. Benzerara**, T.P. Trainor, and A.M. Spormann. *Frontiers in Mineral Sciences 2007 Conference***,** Cambridge, U.K., 06/2007**.**

"Recent Advances in Surface, Interface, and Environmental Geochemistry". Plenary Lecture. Brown, G.E., Jr., T. Kendelewicz, T.P. Trainor, K.S. Tanwar, A.M. Chaka, P.J. Eng, S. Yamamoto, A. Nilsson, H. Bluhm, D.E. Starr, M. Salmeron, J.G. Catalano, T.H. Yoon, **K. Benzerara**, G. Morin, G. Ona-Nguema, F. Juillot, B. Cances, F. Farges, and G. Calas. *12th International Symposium on Water-Rock Interaction*, Kunming, China, 08/2007.

"Microbial biomineralization and redox transformation of As and Fe in an acid mine drainage" Oral. **K. Benzerara**, G. Morin, T.H. Yoon, J. Miot, C. Casiot, F. Farges, and G.E. Brown, Jr. *17th Goldschmidt Conference*, Cologne, 08/2007.

"Structural and chemical evolution of biopolymers during geological cycles". Oral. S. Bernard, **K. Benzerara**, and O. Beyssac. Symposium on Organic Imaging: biomarkers at the microscopic range. *17th Goldschmidt Conference*, Cologne, 08/2007.

"Study at the nanoscale of the alteration of submarine basaltic glass from the Ontong Java Plateau" Oral. **K. Benzerara**, J. Miot, N.R. Banerjee, N. Menguy, T. Tyliszczak, G.E. Brown, Jr., F. Guyot. Symposium on Chemical and Physical Weathering of Basalt on the Earth, Moon and Mars. *17th Goldschmidt Conference*, Cologne, 08/2007.

"Nano-carbonate clustering in organic globules supports a biogenic origin of 2.7 Gyr old stomatolites" Poster. K. Lepot, **K. Benzerara** and P. Philippot. Symposium on Early evolution of life and Bio/hydro/atmosphere. *17th Goldschmidt Conference*, Cologne, 08/2007.

"Combination of STXM and TEM to study geomicrobiological samples". Oral. **K. Benzerara**, G.E. Brown, Jr. Symposium on A Retrospective and Prospective Look at Mineralogy, Petrology, and Geochemistry: A Session in Honor of Gordon E. Brown, Jr. *Geological Society of America Annual Meeting,* Denver, 10/2007.

"Preservation of microbial structures in modern and ancient fossil assemblages: a microscopy and spectroscopy assessment" Oral. **K. Benzerara**, S. Bernard, K. Lepot, J. Miot, Q. Gautier, A. Meibom, P. Lopez-Garcia, O. Beyssac, P. Philippot and G.E. Brown, Jr. Symposium on Traces of life for paleobiology and astrobiology. *European Geosciences Union general assembly*, Vienna, 04/2008.

"May traces of life be preserved in metamorphic rocks? A nanoscale structural study of high grade metamorphic vegetal fossils". Poster. S. Bernard, O. Beyssac, G.E. Brown Jr and **K. Benzerara**. Symposium on Traces of life for paleobiology and astrobiology. *European Geosciences Union general assembly*, Vienna, 04/2008

"Nanoscale evidence for microbial mineralization of 2.7 Ga stromatolites". Oral. K. Lepot, **K. Benzerara**, G.E. Brown, P. Philippot. Symposium on Traces of life for paleobiology and astrobiology. *European Geosciences Union general assembly*, Vienna, 04/2008.

"Nanometer-scale study of iron biomineralization by anaerobic nitrate-dependent iron-oxidizing bacteria". Oral. J. Miot, **K. Benzerara**, G. Morin, F. Skouri-Panet, C. Férard, F. Guyot, A. Kappler. *European Geosciences Union general assembly*, Vienna, 04/2008.

"Scanning Transmission X-ray Microscopy analysis of metamorphic biogenic carbon". Oral. S. Bernard, **K. Benzerara**, O. Beyssac. Symposium on Advances in in-situ detection and analyses of carbon associated with microbial biosignatures. *18th Goldschmidt Conference*, Vancouver, 07/2008.

"Synchrotron X-Ray Studies of Bacteria-Mineral-Metal Ion Interactions". Keynote. Brown, Jr. GE, Gelabert A, Wang Y, Cismasu C, Ha J, Ona-Nguema G, Benzerara K, Morin G & Wang Y. Symposium on The effect of microbes on metal speciation in the environment. A tribute to Terry Beveridge. *18th Goldschmidt Conference*, Vancouver, 07/2008

"Aragonite as a Precursor Phase of Cyanobacterial Calcite Precipitation and the Influence of EPS on the Nucleation Process – A STXM Study" Obst M, Hitchcock AP, Dynes JJ, Lawrence JR, Swerhone GDW & Benzerara K. Symposium on Synchrotron-based micron and sub-micron probes applied to bio-, geo-, and cosmochemical questions. *18th Goldschmidt Conference*, Vancouver, 07/2008

"Nanometer-scale study of iron biomineralization by anaerobic nitrate-dependent iron-oxidizing bacteria". Talk. J. Miot, **K. Benzerara**, G. Morin, F. Skouri-Panet, C. Férard, F. Guyot, A. Kappler. Symposium on Géomicrobiologie en conditions extrêmes et exobiologie. *Réunion des Sciences de la Terre*, Nancy, 04/2008

"Nanoscale investigation of structural and chemical evolution of biopolymers during experimental metamorphism" Bernard S., Beyssac O., **Benzerara K**., Brown Jr. G.E. -. Symposium on Terre Primitive et origines de la vie. *Réunion des Sciences de la Terre*, Nancy, 04/2008

"Preservation of cell-like organic globules in the 2.72 Ga Tumbiana stromatolites". K. Lepot, **K. Benzerara**, P. Philippot, G.E. Brown, Jr. Symposium on Life of the early Earth. *International Geological Congress*, Oslo, 08/2008

"Study of carbonate globules in Lake Van microbialites at the nm-scale". Oral. A.M Desaulty, N. Menguy, J. Kazmierczak, D. Moreira, P. Lopez-Garcia, K. Benzerara. Symposium on Geobiology of stromatolites. International Kalkowsky symposium. Göttingen, 10/2008

"Nanoscale evidence for microbial mineralization of 2.7 Ga stromatolites". Oral. K. Lepot, **K. Benzerara**, G.E. Brown, P. Philippot. Symposium on Geobiology of stromatolites. International Kalkowsky symposium. Göttingen, 10/2008.

"Confocal laser scanning microscopy and molecular identification of cyanobacteria in microbialites of the alkaline crater lake Alchichica (Mexico)" Poster. E. Gérard, D. Moreira, M. Ibrahimi, **K. Benzerara**, J. Kazmierczak, B. Kremer, R. Tavera, S. Kempe, P. Lopez-Garcia. Symposium on Geobiology of stromatolites. International Kalkowsky symposium. Göttingen, 10/2008.

"Iron Biomineralization by Neutrophilic Nitrate-Reducing Iron-Oxidizing Bacteria" Talk, Miot J., **Benzerara K**, Morin G, Kappler A, Obst M, G.E. Brown Jr, F. Guyot. Symposium on Microbial cycling of iron minerals. Goldschmidt, Davos, 06/2009

"Geomicrobiology of Microbialites from the Alchichica Alkaline Lake" Poster, E. Couradeau, **K. Benzerara**, E. Gerard, D. Moreira, P. Lopez-Garcia Symposium on Geomicrobiology and fossil biosignatures. Goldschmidt, Davos, 06/2009

"Chemical and Structural Imaging of Fossilized Tissues at the Nanoscale and Assessment of their Taphonomy" Poster, M.E. Galvez, **K. Benzerara**, O. Beyssac, S. Bernard Symposium on Molecular fossils and compound specific isotopes. Goldschmidt, Davos, 06/2009

"2D, 3D, and in situ STXM in Geomicrobiology" Invited Talk, Obst M, Wang J, Karunakaran C, **Benzerara K**, Dynes JJ, Lawrence JR, Swerhone GDW & Hitchcock AP Symposium on Functional imaging of microbial-mineral processes at the molecular scale. Goldschmidt, Davos, 06/2009

"Imaging Traces of Life in Metamorphic Rocks Using Raman, STXM and NanoSIMS" Talk, Bernard S, Beyssac O, **Benzerara K**, Brown Jr. GE, Mostefaoui S, Meibom A & Goffe B Symposium on Functional imaging of microbial-mineral processes at the molecular scale. Goldschmidt, Davos, 06/2009

"A unique skeletal microstructure of the deep-sea micrabaciid scleractinian corals". Janiszewska, K., Stolarski, J., **Benzerara, K**., Meibom, A., Mazur, M., Kitahara, M. and Cairns, S.D. 2010. *Geophysical Research Abstracts* 12, EGU2010-9523.

"Molecular Mechanisms of As-Binding to Biogenic Iron(III) (Hydr)oxides Precipitated by the Nitrate-Reducing Iron(II)-Oxidizer Acidovorax sp. Strain BoFeN1"Hohmann C, Morin G, Brown Jr. G, Obst M, **Benzerara K** & Kappler A, Goldschmidt conference, Knoxville, 06/2010

"Study at the Nanoscale of Iron Biomineralization on Organic Fibres by a Phototrophic Iron-Oxidizing Bacterium" Invited. **Benzerara K**, Miot J, Obst M, Kappler A, Hegler F, Guyot F & Morin G. Goldschmidt conference, Knoxville, 06/2010

"Iron biomineralization by neutrophilic iron-oxidizing bacteria" Miot, J., **Benzerara, K**., Morin, G., Kappler, A., Obst, M. & Brown, G.E. Jr. 20th General meeting of the international mineralogical association, Budapest, 08/2010

"Diversity and role of cyanobacteria in the formation of Alchichica stromatolites (Mexico)". Couradeau E. **Benzerara K**., Gérard E., Moreira D., Tavera R. López-García P. ISME Conference, Seatlle, 07/2010

"Cellular ultrastructure preservation in plant organic fossils in high-pressure metamorphic rocks" Galvez, M, Beyssac, O., **Benzerara, K**., Bernard, S., Menguy, N., Cox, S., and Brown, G.E. Jr. GSA Annual Meeting, Denver, 10/2010

"Formation of graphitic carbon in a decarbonatation front in eclogites from Corsica (France)". Galvez, M., Martinnez, I., Beyssac, O., **Benzerara**, K., Chopin, C., and Malvoisin, B. GSA Annual Meeting, Denver, 10/2010

Invited « open questions on the significance, mechanisms and environmental implications of microbial biomineralization involved in metal and radionucleide sequestration" **K. Benzerara**, L. Mondani, J. Cosmidis, V. Chapon, J. Miot, A. Kappler, G. Morin. EGU, Vienne, 04/2011

Invited "Study of Mg- and Ca-carbonate precipitation by laboratory cultivated microbialites" **K. Benzerara**, E. Couradeau, E. Gérard, D. Moreira, P. Lopez-Garcia. EGU, Vienne, 04/2011

Invited "An experimentalist call to theoreticians about XANES spectra theoretical simulation at the C K-edge, Ca and Fe L2,3 edges" **K. Benzerara**, O. Beyssac, M. Galvez, S. Bernard, J. Cosmidis. Goldschmidt, Prague, 08/2011

"Early fossilization process of Cyanobacteria in modern microbialites" E. Couradeau, **K. Benzerara**, E. Gerard, I. Esteve, D. Moreira, P. Lopez-Garcia. Goldschmidt, Prague, 08/2011

"Evolution of the macromolecular structure of biopolymers during pyrolysis: a C-XANES study" S. Bernard, O. Beyssac, **K. Benzerara**, G.E. Brown Jr. Goldschmidt, Prague, 08/2011

"Three dimensional Raman/molecular fluorescence imaging of modern stromatolites as a tool to link species identification and carbonate mineralogy" E. Gérard, B. Ménez, E. Couradeau, D. Moreira, **K. Benzerara**, P. López-García. Origins, 06/2011 Bordeaux

"Early fossilization process of Cyanobacteria in modern microbialites" E. Couradeau, **K. Benzerara**, E. Gerard, I. Esteve, D. Moreira, P. Lopez-Garcia. Goldschmidt, Prague, 08/2011

"Evolution of the macromolecular structure of biopolymers during pyrolysis: a C-XANES study" S. Bernard, O. Beyssac, **K. Benzerara**, G.E. Brown Jr. Goldschmidt, Prague, 08/2011

"Experimental Investigation of the Stability of Fe-Rich Carbonates in the Lower Mantle" Boulard E, Menguy N, Auzende A-L, **Benzerara K,** Bureau H, Antonangeli D, Corgne A, Morard G, Siebert J, Perrillat J-P, Guyot F, Fiquet G. Goldschmidt, Prague, 08/2011

"Redox Reactions on Mineral Surfaces: Spectroscopic and Imaging Studies at the Molecular Level" Brown G, Morin G, Ona-Nguema G, Juillot F, Fandeur D, **Benzerara K**, Calas G, Wang Y, Ha J, Kaya S, Kendelewicz T, Spormann A & Nilsson A. Goldschmidt, Prague, 08/2011

"Graphitic carbon formation through calcite reduction in blueschist metasediments from Alpine Corsica (France)" M. Galvez, O. Beyssac, I. Martinez, **K. Benzerara**, and B. Malvoisin. EGU,

Outstanding student poster: "Fungal alteration of organic coatings on sand grains" Rothhardt, S.; Gleixner, G.; Benzerara, K.; Fischer, C.; Gaupp, R. EGU, Vienna, 04/2012

"An Early-Branching Microbialite Cyanobacterium Forms Intracellular Carbonates" Couradeau E, **Benzerara K**, Gerard E, Moreira D, Bernard S, Brown Jr. GE & Lopez-Garcia P. Goldschmidt, Montreal, 06/2012

"Investigating the Role of Microbial Processes in the Weathering of Rock-Derived Graphitic Carbons" Berlendis S, Beyssac O, **Benzerara K**, Skouri-Panet F & Ferard C. Goldschmidt, Montreal, 06/2012

"Isotopic and Petrologic Evidence for Graphite Formation by Carbonate Reduction in Blueschist Metamorphic Rocks" Galvez ME, Martinez I, Beyssac O, **Benzerara K**, Malvoisin B, Chopin C & Malavieille J. Goldschmidt, Montreal, 06/2012.

"Nanometer Scale Characterization of Fossil Bacteria in an Eocene Phoshorite Sample" Cosmidis J, **Benzerara K**, Esteve I & Gheerbrant E. Goldschmidt, Montreal, 06/2012.

Invited: "Redox Reactions Affecting Arsenic at Iron-(oxyhydr)oxide Mineral Surfaces" Morin G, Ona-Nguema G, **Benzerara K**, Juillot F, Wang Y, Hohmann C, Obst M, Kappler A & Brown Jr. GE. Goldschmidt, Montreal, 06/2012.

Experimental fossilization of bacteria and biominerals: applications for the search of microfossils in ancient rocks" Li, JH, Bernard, S., Beyssac, O., **Benzerara, K**., Moussou, J. GSA meeting, Charlotte, 11/2012.

"Micro and nano-textural evidence of Ti(-Ca-Fe) mobility during fluid-rock interactions in fossiliferous metamorphic rocks from New Zealand". Galvez, M. E., Beyssac, O., **Benzerara, K**., Menguy, N., Bernard, S. GSA meeting, Charlotte, 11/2012.

« Abiotic synthesis of amorphous (Ba, Ca, Sr, Mg)- carbonates: mimicking intracellular controlled calcification by cyanobacteria ». N. Cam, T. Georgelin, **K. Benzerara**, M. Jaber, J.F. Lambert. International Symposium on Biomineralization, Freiberg, 08/2013. Oral

"Multimodal and Multiscale Microscopies to Study Biomineralization and Crystallization Processes" Menguy N, **Benzerara K**, Li J, Cormier L, Dargaud O, Radtke G. Goldschmidt, Florence, 08/2013

"Intracellular Calcification by Cyanobacteria: A Significant Controlled Biomineralization Process" **Benzerara K**, Skouri-Panet F, Ragon M, Cam N, Li J, Ferard C, Lambert J-F, Georgelin T, Jaber M, Moreira D, Lopez-Garcia P & Julie C. Goldschmidt, Florence, 08/2013.

"Poorly-Crystalline Fe(Mg) Silicates Involved in Early Fossilization of Microbes in Modern Microbialites" Li J, Zeyen N, **Benzerara K**, Bernard S, Beyssac O. Goldschmidt, Florence, 08/2013

"Bacterial Formation of Fe-Phosphates in the Water Column of Meromictic Ferruginous Lake Pavin (Massif Central, France)" Cosmidis J, **Benzerara K**, Morin G, Busigny V, Jézéquel D, Lebeau O, Noël V, Dublet G & Othmane G. Goldschmidt, Florence, 08/2013

"Natural Uranium Ores Host Iron-Reducing and Iron-Oxidizing Bacteria as Demonstrated by High Throughput Sequencing and Cultural Approaches" Mondani L, **Benzerara K**, Carriere M, Christen R, Fevrier L, Achouak W, Nardoux P, Berthomieu C, Chapon V. Goldschmidt, Florence, 08/2013 *Poster*

"Graphite Formation by Calcite Reduction during Subduction" *Poster* Galvez M, Beyssac O, Martinez I & **Benzerara K** Goldschmidt, Florence, 08/2013.

"Precipitation of Low-T Hydrated Talc by Microorganisms in Modern Microbialites from Mexico". Zeyen N, Benzerara K, Li J, Groleau A, Balan E & Robert J-L. Talk. Symposium on Life in Rocks and Mineral Precipitates Goldschmidt, Sacramento, 06/2014

"Integrative studies of late Triassic vertebrate coprolites from Poland" Zaton, M., Marynowski, L., Niedzwiedzki, G., **Benzerara, K**., Pott, C., Filipiak, P.. GSA, Vancouver, 10/2014

"Iron Oxidation Processes During Asteroidal Fluid-Rock Interactions: a Nanoscale Study of Serpentine-bearing Alteration Assemblages in the Murray Meteorite" Elmaleh, A., Bourdelle, F., **Benzerara, K**., Caste, F., Leroux, H., Devouard, B. AGU San Francisco, 12/2014

"Carbonaceous Phases and Mineralogy of Ultracarbonaceous Antarctic Micrometeorites Identified by C- and N-XANES/STXM and TEM". Engrand C., **Benzerara K**., Leroux H., Duprat J., Dartois E., N. Bardin and L. Delauche. LPSC 2015, Houston, 03/2015.

"Non-Cyanobacterial Lineages Likely Contribute to Carbonate Precipitation in Modern Microbialites". Saghaï A, **Benzerara K**, Zeyen N, Zivanovic Y, Moreira D, Bertolino P & López-García P Poster. Symposium on Modern and Past Microbialites: How do they form? What have we learnt? Goldschmidt, Prague, 08/2015

"High Local Iron Enrichments in Modern Microbialites from Mexico: Speciation and Origin". Zeyen N, **Benzerara K**, Templeton A, Webb S & Gérard E Poster. Symposium on Modern and Past Microbialites: How do they form? What have we learnt? Goldschmidt, Prague, 08/2015

"In-Vitro Synthesis of Amorphous Mg-, Ca-, Sr- and Ba-Carbonates: What do We Learn About Intracellular Calcification by Cyanobacteria?". Cam N, Georgelin T, Jaber M, Lambert J-F & **Benzerara K** Talk. Symposium on Biomineralization 2: Advances in Studying and Mimicking Mineralization Processes by Microorganisms. Goldschmidt, Prague, 08/2015

"Intracellular Ca-Carbonate Biomineralization in Cyanobacteria: New Facts and Some Speculations". **Benzerara K**, Blondeau M, Cam N, Etique M, Férard C, Margaret-Oliver I & Skouri-Panet F. Talk. Symposium on Biomineralization 2: Advances in Studying and Mimicking Mineralization Processes by Microorganisms. Goldschmidt, Prague, 08/2015

"The SuperCam Remote Sensing Instrument Suite for Mars 2020". Wiens R.C. et al. 47th Lunar and Planetary Science Conference, Houston (USA) 03/2016

"An early-branching cyanobacterium at the origin of primary photosynthetic eukaryotes" Ponce-Toledo R, Deschamps P, Zivanovic Y, López-García P, **Benzerara K**, Moreira D. Protist 2016, Moscou (Russie), 06/2016.

"Serpentinization in Carbonaceous Chondrites: A Nanoscale Mineralogical Study" Elmaleh A, Bourdelle F, Menguy N, **Benzerara K,** Leroux H, Caste F & Fialin M. Goldschmidt Conference, Yokohama, Japon, 08/2016.

"Intracellular biomineralization mechanisms within cyanobacteria forming calcium carbonate inclusions". Blondeau M, Cam N, Skouri-Panet F, Poinsot M, Zeyen N, Ferard C, De Wever A, Guigner J-M, Leroy E, Gillet C, Boulogne C, Li J, Sachse M. Trichet M, Frébourg G, **Benzerara K**. Gordon Research Conference on Biomineralization, "Interactions Between Organic and Inorganic Materials Across Time and Length Scales", Girone (Espagne), 08/2016.

"Formation of intracellular (Ca, Mg, Sr, Ba)-carbonates by a cyanobacterium: a new bio-indicator of water quality, with high potential for bioremediation" Blondeau M Cam N, Skouri-Panet F, Poinsot M, Zeyen N, Ferard C, Guigner JM, Leroy E, Boulogne C, Gillet C, Li J, Sachse M, **Benzerara K**., 3rd International Conference on Bioinspired and Biobased Chemistry & Materials, Nice, 10/2016.

"Geochemical conditions allowing the formation of modern lacustrine microbialites." Zeyen N., Daval D., López-Garcia P., Moreira D., Gaillardet J., **Benzerara K**. 15th Water-Rock Interaction International Symposium, Évora (Portugal), 10/2016.

« Exploring Iron Silicate Precursors of Ancient Iron Formations through Rock Record, Laboratory and Field Analogue Investigations". Johnson JE, B. Rasmussen, J. Muhling, **K. Benzerara**, D. Jezequel, J. Cosmidis, A.S Templeton. AGU; San Francisco (USA), 12/2016

"A C-, N-, O-XANES/STXM and TEM Study of Organic Matter and Minerals in Ultracarbonaceous Antarctic Micrometeorites (UCAMMs)". Charon E., C. Engrand, **K. Benzerara**, H. Leroux, S. Swaraj, R. Belkhou, J. Duprat, E. Dartois, M. Godard, L. Delauche, 48th Lunar and Planetary Science Conference, Houston (USA), 01/2017

"Exploring microbial life in the multi-extreme environment of Dallol, Ethiopia". Belilla J, Moreira D, Jardillier L, Bertolino, P, Alain K, L'Haridon S, López-Archilla AI, López-García JM, Kotopoulou E, Garcia-Ruiz JM, Delgado A, **Benzerara K**, López-García P, Life origins, Early Earth and ExoEarths: origin and evolution of life, Varsovie (Pologne), 04/2017.

"Speciation of Fe in modern Mexican lacustrine microbialites".Zeyen N., **Benzerara K**., Morin G., Brest J., Menguy N., Templeton A., Webb S., Gérard E. Goldschmidt conference, Paris, 08/2017.

"Adaptation to Growth on Fe(II) in the Photoferrotroph R. Palustris TIE-1: A Proteomic and Electron Microscopy Analysis". Bryce C, Kleindienst S, **Benzerara K**, Miot J, Newman DK, Kulkarni G, Byrne JM, Franz-Wachtel M, Macek B & Kappler A Goldschmidt conference, Paris, 08/2017.

"Advanced InfraRed and Raman Spectroscopy on Ca-Phosphates and Mg-Carbonates for Surface Exploration of Mars". Fau A, Beyssac O, Gauthier M, Bernard S, **Benzerara K**, Meslin P-Y, Drouet C, Maurice S, Guyot F & Balan E Goldschmidt conference, Paris, 08/2017.

"Barium and Sr Isotopic Fractionation during their Uptake by Cyanobacteria Forming Intracellular Carbonates". Coutaud M, Bouchez J, van Zuilen K, Moynier F, Gorge C, Poinsot M, Skouri-Panet F & **Benzerara K** Goldschmidt conference, Paris, 08/2017.

"Chemistry Versus Biology – "True" and "False" Biosignatures Formed Through Biomineralization and Organomineralization Processes". Cosmidis J, Templeton A, **Benzerara K**, Skouri-Panet F, Duprat E & Macalady J Goldschmidt conference, Paris, 08/2017.

« CLSM/SEM Correlative Study of the Dissolution of Intracellular Calcium Carbonate in Cyanobacteria Under a Heat Stress". Ferard C, Etique M, Blondeau M, Poinsot M, Skouri-Panet F & **Benzerara K** Goldschmidt conference, Paris, 08/2017.

"Deciphering the Functional Potential of Microorganisms for P Cycling: A Genomics Perspective on Metal-Phosphate Biomineralization". Caumes G, **Benzerara K**, Chan Sock Peng E, Cosmidis J, Skouri-Panet F & Duprat E Goldschmidt conference, Paris, 08/2017.

« Differences in Ca Homeostasis between Cyanobacteria Forming and Not-Forming Intracellular Ca-Carbonates". De Wever A, Coutaud M, Blondeau M, Poinsot M, Skouri-Panet F, Caumes G, Laurent T, Gugger M & **Benzerara K** Goldschmidt conference, Paris, 08/2017.

« Diversity of Phosphatases in the Biomineralizing Bacterium Ramlibacter Tataouinensis: An in Vitro and in Silico Study". Skouri-Panet F, **Benzerara K**, Cosmidis J, Ferard C, Caumes G, De Luca G, Heulin T & Duprat E Goldschmidt conference, Paris, 08/2017.

"Exploring Microbial Life in the Multi-Extreme Environment of Dallol, Ethiopia". Belilla J, Moreira D, Jardillier L, Bertolino P, Alain K, Lopez-Garcia JM, **Benzerara K**, Lopez-Archilla AI & Lopez-Garcia P Goldschmidt conference, Paris, 08/2017.

"Fe Biomineralization in the Meromictic Lake Pavin". Miot J, Duprat E, Remusat L, **Benzerara K**, Jézéquel D, Cordier L, Viollier E, Skouri-Panet F, Férard C, Poinsot M, Rivas-Lamelo S, Gonzalez A, Pont S & Berg J Goldschmidt conference, Paris, 08/2017.

"Microorganisms are Major Drivers of the P Geochemical Cycle in Lake Pavin (Massif Central, France)". Duprat E, **Benzerara K**, Lefèvre C, Monteil C, Jézéquel D, Menguy N, Viollier E, Guyot F, Férard C, Miot J, Poinsot M, Rivas-Lamelo S, Skouri-Panet F & Trcera N Goldschmidt conference, Paris, 08/2017.

"Origin of Siderite in Anoxic and Ferruginous Lake Pavin: Clues from C and O Isotope Compositions". Busigny V, **Benzerara K**, Ader M, Chaduteau C & Jézéquel D Goldschmidt conference, Paris, 08/2017.

"Speciation of Fe in Modern Mexican Lacustrine Microbialites". Zeyen N, **Benzerara K**, Morin G, Brest J, Menguy N, Templeton A, Webb S & Gérard E Goldschmidt conference, Paris, 08/2017.

"Time-Resolved Raman Spectroscopy for Mars Exploration: Insights from a Laboratory Analogue of the Mars2020 SuperCam Instrument". Beyssac O, Gauthier M, Maurice S, Wiens RC, Fau A, Bernard S & **Benzerara K** Goldschmidt conference, Paris, 08/2017.

"Effect of LIBS Laser Shots on Mineral Structure and Raman Signature: Preparing for Mars 2020 SuperCam Instrument" Fau A., Beyssac O., Benzerara K., Bernard S., Meslin P.-Y. et al. 49th LPSC, Houston, 03/2018.

"Ultracarbonaceous Antarctic micrometeorites (UCAMMS): Clues for their origin" C Engrand, E Charon, J Duprat, E Dartois, H Leroux, K Benzerara, C Le Guillou, S Bernard, S Swaraj, R Belkhou, L Delauche, M Godard, B Augé. 49th LPSC, Houston, 03/2018.

"Composition of ultracarbonaceous antarctic micrometeorites (ucamms). Comparison with rosetta/cosima analyses". Engrand C, Dartois E, Duprat J, Charon E, Leroux H, Le Guillou C, Bernard S, Benzerara K, Swaraj S, Belkhou R, Delauche L, Godard M, Augé B. 81st Annual meeting of the Meteoritical Society, Moscou, 07/2018

"Magnetoccocus from ferruginous Lake Pavin: a new model for intracellular sequestration of phosphorus" Benzerara K, Duprat E, Lefèvre C, Menguy N, Monteil C, Jézéquel D, Viollier E, Bidaud C, Férard C, Guyot F, Miot J, Poinsot M, Rivas-Lamelo S, Skouri-Panet F, Trcera N. The 6th International Meeting on Magnetotactic Bacteria. Ishikawa (Japon), 09/2018