

Peer-reviewed publications:

Published manuscripts

2014

1. Woehl T. J., Kashyap S., Firlar E., Perez-Gonzalez T., **Faivre D.**, Trubitsyn D., Bazylinski D. A., and Prozorov T., Correlative electron and fluorescence microscopy of live magnetotactic bacteria in liquid: towards imaging in vivo, *Scientific Reports*, in press.
2. Kumari M., Widdrat M., Tompa E., Uebe R., Schüler D., Pósfai M., **Faivre D.**, and Hirt A. M., Distinguishing magnetic particles size of iron oxide nanoparticles with FORC analysis, *Journal of Applied Physics*, **116**, 124304.
3. Wilke P., Helfricht N., Mark A., Papastavrou G., **Faivre D.**, and Börner H. G., A direct biocombinatorial strategy toward next generation, mussel-glue inspired salt water adhesives, *Journal of the American Chemical Society*, **136** (36), 12667-12674.
4. Körnig A., Dong J., Widdrat M., Andert J., Müller F., Schüler D., Klumpp S., and **Faivre D.**, Probing the mechanical properties of a macromolecular scaffold in living magnetotactic bacteria, *Nano Letters* **14** (8), 4653-4659.
5. Widdrat M., Kumari M., Pósfai M., Hirt A. M., and **Faivre D.**, Keeping nanoparticles fully functional: long term storage and alteration of magnetite, *ChemPlusChem* **79** (8), 1225-1233.
6. Lefèvre C. T., Bennet M., Landau L., Vach P., Pignol D., Bazylinski D. A., Frankel R. B., Klumpp S., and **Faivre D.**, Diversity of magneto-aerotactic behaviours and oxygen sensing in cultured magnetotactic bacteria, *Biophysical Journal* **107**, 527-538.
7. Lohße A., Borg S., Raschdorf O., Kolinko I., Tompa E., Pósfai M., **Faivre D.**, Baumgartner J., and Schüler D., Genetic dissection of the mamAB and mms6 operons reveals a gene set essential for magnetosome biogenesis in *Magnetospirillum gryphiswaldense*, *Journal of Bacteriology* **196** (14), 2658-2669.
8. Prozorov T., Perez-Gonzalez T., Valverde-Tercedor C., Jimenez-Lopez C., Yebra A., Körnig A., **Faivre D.**, Mallapragada S. K., Howse P. A., Bazylinski D. A., and Prozorov R., Manganese incorporation into the magnetosome magnetite: Magnetic signature of doping, *European Journal of Mineralogy* **26** (4), 457-471.
9. Bennet M., McCarthy A., Fix D., Edwards M. R., Repp F., Vach P., Dunlop J. W. C., Sitti M., Buller G. S., Klumpp S., and **Faivre D.**, Correlative microscopy of magneto- aerotaxis under physiological conditions, *PLoS ONE* **9** (7), e101150.
10. Körnig A., Winklhofer M., Baumgartner J., Perez Gonzalez T., Fratzl P., and **Faivre D.**, Magnetite crystal orientation in magnetosome chains, *Advanced Functional Materials* **24** (25), 3926-3932.
11. Helminger M., Wu B., Kollmann T., Benke D., Schwahn D., Pipich V., **Faivre D.**, Zahn D., and Cölfen H., Synthesis and characterization of gelatin based magnetic hydrogels, *Advanced Functional Materials* **24** (21), 3187-3196.
12. Körnig A., Hartmann M. A., Teichert C., Fratzl P., and **Faivre D.**, Magnetic force imaging of a chain of biogenic magnetite and Monte Carlo analysis of tip-particle interaction, *Journal of Physics D: Applied Physics* **47**, 235403.
13. Baumgartner J., Carillo M. A., Eckes K., Werner P and **Faivre D.**, Biomimetic Magnetite Formation: From biocombinatorial approaches to mineralization effects, *Langmuir* **30** (8), 2129-2136.

14. Bennet M. A., Akiva A., **Faivre D.**, Malkinson G., Yaniv K., Abdelilah-Seyfried S., Fratzl P., and Masic A., Simultaneous fluorescence-Raman imaging of bone mineralization in living zebrafish larvae, *Biophysical Journal* **106** (4), L17-L19 (**journal cover**).

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15. Carillo M. A., Bennet M. A., and **Faivre D.**, The interaction of proteins associated to the magnetosome assembly in magnetotactic bacteria as revealed by 2-hybrid 2-photon excitation FLIM-FRET, *The Journal of Physical Chemistry B* **117** (47), 14642-14648.

16. Baumgartner J., Morin G., Menguy N., Perez Gonzalez T., Widdrat M., Cosmidis J., and **Faivre D.**, Magnetotactic bacteria form magnetite from a phosphate-rich ferric hydroxide via nanometric ferric (hydr)oxide intermediates, *Proceedings of the National Academy of Science of the USA* **110** (37), 14883-14888.

17. Vach P., Brun N., Bennet M., Bertinetti L., Widdrat M., Baumgartner J., Klumpp S., Fratzl P., and **Faivre D.**, Selecting for function: A combinatorial approach to magnetic nanopropellers, *Nano Letters* **13** (11), 5373-5378.

18. Siponen M. I., Legrand P., Widdrat M., Jones S. R., Chang M. C. Y., **Faivre D.**, Arnoux P., and Pignol D., Structural insight into magnetochrome-mediated magnetite biomineralization, *Nature*, **502**, 681-684.

19. Baumgartner J., Bertinetti L., Widdrat M., Hirt A., and **Faivre D.**, Formation of magnetite at low temperature: From superparamagnetic to stable single domain particles, *PLoS ONE* **8** (3), e57070.

20. Baumgartner J., Dey A., Bomans P. H. H., Le Coadou C., Fratzl P., Sommerdijk N. A. J. M., and **Faivre D.**, Nucleation and growth of magnetite from solution, *Nature Materials* **12**, 310-314 (**ISI Highly cited paper**).

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21. Baumgartner J., Lesevic P., Kumari M., Halbmaier K., Bennet M., Körnig A., Widdrat M., Andert J., Wollgarten M., Bertinetti L., Strauch P., Hirt A., and **Faivre D.**, From magnetotactic bacteria to hollow spirilla-shaped silica containing a magnetic chain, *RSC Advances* **2** (21), 8007-8009.

22. Murat D., Falahati V., Bertinetti L., Csencsits R., Downing K., **Faivre D.**, and Komeili A., The magnetosome membrane protein, MmsF, is a major regulator of magnetite biomineralization in *Magnetospirillum magneticum* AMB-1, *Molecular Microbiology* **85** (4), 684-699.

23. Sonkaria S., Fuentes G., Verma C., Narang R., Khare V., Fischer A., and **Faivre D.**, Insight into the assembly properties and functional organisation of the magnetotactic bacterial actin-like homolog MamK, *PLoS ONE* **7** (5), e34189.

24. Klumpp S., and **Faivre D.**, Interplay of magnetic interactions and active movements in the formation of magnetosome chains, *PLoS ONE* **7** (3), e33562.

25. Schwemmer T., Baumgartner J., **Faivre D.**, and Börner H., Peptide-mediated nanoengineering of inorganic particle surfaces: A general route toward surface functionalization via peptide adhesion domains, *Journal of the American Chemical Society* **134** (4), 2385-2391.

2011

26. Charilaou M., Sahu K. K., **Faivre D.**, Fischer A., Garcia-Rubio I., and Gehring A., Evolution of magnetic anisotropy and thermal stability during nanocrystal-chain growth, *Applied Physics Letters* **99**, 182504.

27. Fischer A., Schmitz M., Aichmayer B., Fratzl P., and **Faivre D.** Structural purity of magnetite nanoparticles in magnetotactic bacteria, *Journal of the Royal Society Interface* **8**, 1011-1018 (**in the list of most cited articles of the year**).

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28. **Faivre D.**, Multifunctional materials: Dry but flexible magnetic materials, *Nature Nanotechnology* **5**, 562-563 (**invited News and Views**).

29. **Faivre D.**, Fischer A., Garcia-Rubio I., Mastrogiacomo G., and Gehring A. U., The development of cellular magnetic dipoles, *Biophysical Journal* **99**, 1268-1273.

30. Boettger L., **Faivre D.**, Schüler D., Trautwein A. X., and Matzanke B., Magnetite formation via membrane-bound ferritin and an iron(II) species at the cytoplasmic membrane and in magnetosomes of *Magnetospirillum gryphiswaldense*, *Journal of Physics: Conference Series* **217**, 012020.

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31. Lopez O., Zuddas P., and **Faivre D.**, The influence of temperature and seawater composition on calcite crystal growth mechanisms and kinetics: Implications for Mg incorporation in calcite lattice, *Geochimica et Cosmochimica Acta* **73** (2), 337-347.

32. Carvallo C., Hickey S., **Faivre D.**, and Menguy N., Formation of magnetite in *Magnetospirillum gryphiswaldense* studied with FORC diagrams, *Earth, Planets and Space* **61** (1), 143-150.

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33. **Faivre D.**, Menguy N., Pósfai M., and Schüler D., Environmental parameters affect the physical properties of fast-growing magnetosomes, *American Mineralogist* **93**, 463-469.

2007

34. **Faivre D.**, Boettger L., Matzanke B., and Schüler D., Intracellular magnetite biomineralization in bacteria proceeds via a distinct pathway involving membrane-bound ferritin and ferrous iron, *Angewandte Chemie International Edition* **46**, 8495-8499 and *Angewandte Chemie* **119**, 8647-8652.

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35. Scheffel A., Gruska M., **Faivre D.**, Linaroudis A., Plitzko J. M., and Schüler D., An acidic protein aligns magnetosomes along a filamentous structure in magnetotactic bacteria, *Nature* **440** (7080), 110-114 (**ISI Highly cited paper**).

36. Hirt A. M., Brem F., Hanzlik M., and **Faivre D.**, Anomalous Magnetic Properties of Brain Tissue at Low Temperature: 50 K Anomaly, *Journal of Geophysical Research* **111**, B12S06.

37. **Faivre D.** and Zuddas P., An integrated approach for determining the origin of magnetite nanoparticles, *Earth and Planetary Science Letters* **243** (1-2), 53-60.

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38. **Faivre D.**, Menguy N., Guyot F. Lopez O., and Zuddas P., Morphology of nanomagnetite crystals: implications for formation conditions, *American Mineralogist* **90**, 1793-1800.

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39. **Faivre D.**, Agrinier P., Menguy N., Zuddas P., Pachana K., Gloter A., Laval J.-Y., and Guyot F., Mineralogical and isotopic properties of inorganic nanocrystalline magnetites, *Geochimica et Cosmochimica Acta* **68** (21), 4395-4403.
40. **Faivre D.**, Pachana K., Agrinier P., Menguy N., Guyot F., and Zuddas P., Geochemical properties of inorganic magnetite nanocrystals, *Water-rock interaction* **11**, 1199-1202.
41. **Faivre D.**, Propriétés cinétiques, minéralogiques et isotopiques de la formation de nanomagnétites à basse température : implication pour la définition de critères de biogénicité. PhD Thesis, Denis Diderot University, Paris, 102 p.

2003

42. Zuddas P., Pachana K., and **Faivre D.**, The influence of dissolved humic acids on the kinetics of calcite precipitation from seawater solutions, *Chemical Geology* **201**, 91-101.

Peer-reviewed review or feature articles:

1. **Faivre D.** and Ukmar Godec T. (submitted), From Bacteria to Mollusks: The Principles Underlying the Biomineralization of Iron Oxide Materials, *Angewandte Chemie International Edition* (manuscript number 201408900).
2. **Faivre D.** and Schüler D. (2008) Magnetotactic Bacteria and Magnetosomes, *Chemical Reviews* **108** (11), 4875-4898 (**invited review, ISI Highly cited paper**).
3. Lang C., Schüler D., and **Faivre D.** (2007) Synthesis of Magnetite Nanoparticles for Bio- and Nanotechnology: Genetic Engineering and Biomimetics of Bacterial Magnetosomes, *Macromolecular Bioscience* **7**, 144-151 (**in the list of most downloaded and cited articles of the year**).

Book chapters:

1. Lin W., Benzerara K., **Faivre D.**, and Pan Y., Intracellular biomineralization by bacteria, editorial in *intracellular biomineralization by bacteria* (ed. Lin W., Benzerara K., **Faivre D.**, and Pan Y.), ebook frontiers in Microbiology.
2. Zuddas P., **Faivre D.**, Duhamel J.-R. (2013) Magnetite minerals in the Human brain : what is their role, in *Medical Geochemistry: Geological Materials and Health* (ed. P. Censi, T. Darrah, and Y. Erel), 91-99, Springer, Heidelberg.
3. Carillo M. A., Vach P., and **Faivre D.** (2013) Magnetic nanoparticles in bacteria, in *Bio-inspired Materials design: Function through Inner Architecture* (RSC Smart Materials No. 4)(ed. P. Fratzl, J.W.C. Dunlop, and R. Weinkamer), 235-255, RSC Publishing, Cambridge.
4. Bennet M., Perez-Gonzalez T., Wood D. and **Faivre D.** (2013) Magnetosomes, in *Bionanotechnology: biological self-assembly and its applications* (ed. B. H. A. Rehm), 241-272, Horizon Scientific Press, Hethersett.
5. Körnig A., and **Faivre D.** (2012) Nanoparticles in magnetotactic bacteria, in *Nature's Nanostructures* (ed. A.S. Barnard and H. Guo), 249-271, Pan Stanford Publishing, Singapore.
6. Baumgartner J., and **Faivre D.** (2011) Magnetite Biomineralization in Bacteria, in *Progress in Molecular and Subcellular Biology* (Vol. 30), *Molecular Biomineralization: Aquatic Organisms Forming Extraordinary Materials* (ed. W.E.G. Müller), 3-27, Springer, Heidelberg.

7. **Faivre D.** (2007) Biomimetic Formation of Magnetite Nanoparticles, in *Handbook of Biomineralization* (Vol. 2): *Biomimetic and Bio-inspired Materials Chemistry* (ed. E. Bäuerlein and P. Behrens), 159-172, Wiley-VCH, Weinheim.
8. **Faivre D.** and Zuddas P. (2007) Mineralogical and isotopic properties of biogenic nanocrystalline magnetites, in *Microbiology Monographs* (Vol. 3), *Magnetoreception and Magnetosomes in Bacteria* (ed. D. Schüler), 175-196, Springer, Heidelberg.