

SÉBASTIEN MERKEL

Professor
Unité Matériaux et Transformations
Université de Lille
Honorary member, Institut Universitaire de France
<http://merkel.texture.rocks/>

Born on September 11th, 1974 in
Ambilly, Haute-Savoie, France
Citizenship: French
ORCID : [0000-0003-2767-581X](https://orcid.org/0000-0003-2767-581X)
Publons/ResearcherID : [E-5501-2011](https://publons.com/author/pub/5501-2011)

RESEARCH STATEMENT

My research focuses on understanding the dynamics and formation of the deeper portions of the Earth. I perform experiments under the pressure and temperature of the Earth's interior to study microstructures in polycrystals, their mechanical behaviour, and their relation to phase transformations. I then integrate the results of my experiments into polycrystal numerical models to understand wave propagation through complex microstructures and compare the results of these models to seismic observations. This work aims at understanding the dynamics and formation of the Earth's mantle and inner core.

PROFESSIONAL EXPERIENCE

2010–present: Professor of Physics at the Université de Lille, France
2014–2019: Junior member of the Institut Universitaire de France
2006–2010: CNRS research assistant at the Université de Lille, France
2004–2006: Miller fellow at the Department of Earth and Planetary Science, University of California, Berkeley, USA, with Hans-Rudolf Wenk
2002–2004: Japanese Society for the Promotion of Science (JSPS) post-doctoral fellow at the Institute for Solid State Physics, University of Tokyo, Japan, with Takehiko Yagi
1999–2002: PhD student at the Laboratoire des Sciences de la Terre of the Ecole Normale Supérieure de Lyon, France, and the Geophysical Laboratory, Carnegie Institution of Washington, USA. Supervision: Philippe Gillet and Russell J. Hemley
1997–1999: predoctoral fellow at the Geophysical Laboratory, Carnegie Institution of Washington, Washington DC, USA, with Russell J. Hemley

EDUCATION

2009: “Habilitation à diriger les recherches” in Physics at the Université Lille 1, France
1999–2002: PhD in Geology at the Ecole Normale Supérieure de Lyon, France
1994–1997: Undergraduate studies and MSc in Physics at the Ecole Normale Supérieure de Lyon, France

DISTINCTIONS AND FELLOWSHIPS

2020: Blaustein invited professor, Stanford University, United States
2014–2019: Junior Member of the Institut Universitaire de France
2011: Medal for Research Excellence of the European Mineralogical Union
2002: Mineral and Rock Physics Outstanding Student Award, American Geophysical Union

SCIENTIFIC PRODUCTION

Publications

- 77 publications in peer-reviewed international journals
- Citation metrics (source: [Web of Science](https://www.webofscience.com), December 2022): 2408 citations, h-index: 30

Communications

- 63 invited presentations (seminars, conferences, summer schools, etc)
- 73 other presentations given in person (orals, posters)

SUPERVISION

Post-doctoral fellows

- 2021-2022: John Keith Magali Velasquez
- 2021: Marzena Baron

- 2013-2014: Angelika Rosa, fellowship of the Swiss National Fund

PhD students

- 2018–2022: Jeffrey Philipp Gay, Université de Lille
Microstructures and anisotropy of pyrolyte in the Earth's lower mantle: insights from high pressure/temperature deformation and phase transformation experiments
- 2018–2022: Tommaso Mandolini, Université de Lille, co-supervised with Nadège Hilairet
Microstructural evolution of polymineralic aggregates deformed under high pressure and temperature: an in-situ and post-mortem study on olivine+serpentine
- 2018–2021: Estelle Ledoux, Université de Lille, co-supervised with Damien Jacob
Transformation and Deformation Microstructures in the Earth Mantle: Application to Periclase and Wadsleyite
- 2014–2017: Christopher Langrand, Université de Lille, co-supervised with Nadège Hilairet
Experimental Study of Perovskite / Post-Perovskite Phase Transformation Mechanism and its Kinetics in the Earth Mantle
- 2010–2013: Ainoha Lincot, Université Joseph Fourier, Grenoble, co-supervised with Ph. Cardin
Direct models of Earth inner core seismic anisotropy and study of textures induced by the α - ϵ transition in Fe
- 2009–2013: Caroline Bollinger, Université Lille 1
Rheology of polycrystalline olivine under upper mantle conditions: an in-situ study in the D-DIA
- 2008–2011: Carole Nisr, Université Lille 1, co-supervised with P. Cordier
In-situ characterization of dislocations in minerals under high pressure

Master and undergraduate students

- 2022: Corentin Savignoni, Université de Lille, Undergraduate research project
- 2021: Hélène Ginestet, Université de Lille, Undergraduate research project
- 2018: Rayanna Moustapha, Sarah Combet, Université de Lille, Undergraduate research project
- 2017: Hajar Benouda, Université Lille 1, Undergraduate research project
- 2016: Matthieu Thierry, Université Lille 1, Master research project
- 2015: Agnes Valovics, University of St Andrews, Scotland, Undergraduate research project
- 2015: David Fuseau, Université Lille 1, Undergraduate research project
- 2014: Ali Dia, Université Lille 1, Master Thesis
- 2014: Benjamin Malfait, Guillaume Bonamis, Université Lille 1, Undergraduate research project
- 2013: Loraine Boust, Lycée Malherbe, Caen, Undergraduate research project
- 2012: Amélie Malpot, Ecole Centrale de Lille, Master Thesis
- 2012: Maxime Thiebaut, Rémi Fourier, Université Lille 1, Undergraduate research project
- 2011: Florian Marmuse, Lycée Louis-le-grand, Paris, Undergraduate research project
- 2008: Marion Gruson, Ecole Centrale de Nantes, Master Thesis
- 2007: Carole Nisr, Université Lille 1, Master Thesis
- 2005: Lowell Miyagi, University of California, Berkeley, un-official supervision of the 1st year of PhD thesis, official advisor: Hans-Rudolf Wenk
- 2003: Tristan Ferroir, Ecole Normale Supérieure de Lyon, Undergraduate internship

Technical staff

- Supervision of J. Chantel, Research Engineer, Université de Lille
- Supervision of A. Marin, Engineer, CNRS, Université de Lille

International students and visitors

- 2018-now: Matthias Krug, PhD candidate at Universität Münster, Germany
- 2016–2018: Feng Lin, PhD candidate at the University of Utah, United States
- 2015–2018: Morvarid Saki, PhD candidate and post-doctoral fellow at Universität Münster, Germany
- 2016: Binbin Yue, post-doctoral fellow at HPSTAR, Shanghai, China
- 2011–2012: Angelika Rosa, PhD candidate at ETH Zürich, Switzerland

PROFESSIONAL INVOLVEMENT

Local, Université de Lille

- 2020–now: board member, Physics Department
- 2017–now: member of the executive committee of the UMET laboratory
- 2008–now: webmaster for the UMET laboratory (<http://umet.univ-lille1.fr>)
- 2017–2022: head of the Physics Department Teaching Committee
- 2011–2018: member of the Physics Teaching Department Council
- 2015–2017: member of the scientific advisory committee of the UMET laboratory
- 2013: restructuring of the curriculum in condensed matter physics
- 2010–2020: webmaster of the Master of Physics at Université de Lille

- 2008–2014: member of the Laboratory Council
- 2007–2010: member of the Physics Department Recruitment Council

National

- 2009: report on the use of synchrotron in Earth science in France for the Société Française de Minéralogie et Cristallographie

International

- For the *American Geophysical Union*
 - 2012–now: member of the executive committee of the *Mineral and Rock Physics* section (MRP)
 - 2019–2022: council member for the *American Geophysical Union*
 - 2019–2022: president-elect then section president for MRP
 - 2015–2018: chair for the *Mineral and Rock Physics Early Career Award*
 - 2012–2014: program officer of the Fall Meeting for MRP
- For the *International Union of Crystallography*
 - 2021–now: funding member of the *Commission on Digital Microstructure Imaging*
- For the *European Synchrotron Radiation Facility*
 - 2015–2019: representative for *Dynamics and Extreme Conditions* at the ESRF Users Organisation Committee

CONTRIBUTIONS TO SCIENTIFIC MEETINGS

Meetings

- 2017: co-organizer for the *High Pressure Mineral Physics Seminar*, Saint Malo, France
- 2017: co-organizer for *Rayons X et Matière*, Villeneuve d'Ascq, France
- 2016, 2017, 2018, 2019: co-organizer of the ESRF user meeting
- 2011: co-organiser of the *Plasticité 2011* workshop in Lille
- 2009, 2011: co-organizer of prospective meeting on synchrotron in Earth science (Lyon and Paris)
- 2012–2014: program officer for *Mineral and Rock Physics* at the American Geophysical Union Fall Meeting (22000 abstracts in 2013, including 450 for MRP)

Sessions

- *European Geoscience Union General Assembly* (2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023)
- *American Geophysical Union Fall Meeting* (2007, 2010, 2011, 2013, 2014, 2015, 2016)
- *European Mineralogical Conference* (2012)

REVIEWER CONTRIBUTIONS

Dissertation committees

- 2022: PhD Thesis, Konstantinos Thomaidis, Université de Lille, France
- 2022: PhD Thesis, Baptiste Truffet, Sorbonne Université, Paris, France
- 2020: PhD Thesis, Feng Lin, University of Utah, United States
- 2019: PhD Thesis, Francesca Miozzi, Sorbonne Université, Paris, France
- 2019: Habilitation à Diriger les Recherches, Guillaume Morard, Sorbonne Université, Paris, France
- 2017: Habilitation à Diriger les Recherches, Volodymyr Svitlyk, Université Grenoble Alpes, France
- 2016: PhD Thesis, Arnaud Proietti, Université de Toulouse, France
- 2015: Habilitation à Diriger les Recherches, Agnès Dewaële, Université Pierre et Marie Curie, Paris, France
- 2012: PhD Thesis, Angelika Rosa, ETH Zurich, Switzerland
- 2011: PhD Thesis: Giacomo Lo Nigro Université Blaise Pascal-Clermont-Ferrand II, France

Scientific journals

- About 100 reviews for scientific journals: 55 % in geophysics and mineralogy, 25 % in physics et materials science, 5 % on experimental developments and 10 % in general audience journals (*Science*, *Nature*)

National evaluations

- Laboratory evaluation for the HCERES, France (2018, IMPMC, Paris)

Funding bodies and large scale facilities

- 2016–2020: member of review panel for *Matter & material properties: Structure, Organisation, Characterisation, Elaboration*, SOLEIL synchrotron, France
- 2016–2019: member of review panel for *Dynamics and Extreme Conditions*, PETRA III synchrotron, Germany

- Recurrent reviewer for the National Science Foundation (US), the Deutsche Forschungsgemeinschaft (DE), the Agence Nationale de la Recherche (FR), Programme National de Planétologie at INSU, CNRS (FR)
- Evaluation panel member for the Deutsche Forschungsgemeinschaft (DE), IDEX funding schemes (FR), the European Synchrotron Radiation Facility (FR)

RECENT FUNDING

- 2022-2027: ERC Advanced Grant “[HotCores - High Temperature Dynamics of Metals and the Earth’s Solid Inner Core](#)”, Project ID: [101054994](#), 2,5 M€
- Recurrent beamtime on international large scale facilities (synchrotrons, free electron lasers, etc): 300 shifts for the group in 2015-2017 for instance (shared with N. Hilaret, P. Raterron, and collaborators). At ESRF, 1 shift costs ~3700 €.
- [Programme National de Planétologie](#), CNRS (2013, 2014, 2016, 2017): 31 k€ in total
- 2020-2021 : ERC Generator, [I-Site Université Lille Nord-Europe](#), 120 k€
- 2018-2022: PI for the [ANR-DFG grant “TIMEleSS”](#), ANR-17-CE31-0025, 755 k€ including 346 k€ in France
- 2017–2020: PhD fellowship from the Université de Lille, ~100 k€
- 2016–2021: High Pressure Research Platform of the [Regional Fund Archi-CM](#), ~450 k€
- 2014–2019: Junior member of the [Institut Universitaire de France](#), 75 k€
- 2014–2017: PhD fellowship from the Université Lille 1 and the Region Hauts de France, ~100 k€
- 2008–2011: PI for the ANR Jeunes Chercheurs grant “DiUP”, ANR-07-5CJC-0136-01, 200 k€
- 2009–2013: co-PI to the ANR grant “Mantle Rheology” (P. Raterron, Université Lille 1), ANR-08-BLAN-0238, 444 k€
- 2009–2012: co-PI to the ANR grant “SUBDEF” (B. Reynard, ENS Lyon), ANR-08-BLAN-0192, 336 k€
- 2007: PI for “Plasticité des phases post-perovskites”, French national program SEDIT, 23 k€.
- 2006: Starting grant (BQR) of the Université Lille 1, 50 k€.

INTERNATIONAL PARTNERSHIPS

- 2018-2019: Hubert Curien Procope partnership with the Westfälische Wilhelms-Universität, Münster, Germany
- 2018-2022: PI for the [ANR-DFG grant “TIMEleSS”](#), ANR-17-CE31-0025
- 2012-2013: Hubert Curien Balaton partnership with Eötvös University, Budapest, Hungary

TEACHING

Undergraduate courses

- Planetology (20h, 1st year introductory course)
- Physics of the Earth (30h, 2nd year in geology, course, practicals)
- Physics of the Earth (20h, 3rd year in physics, course)
- Management of 3rd year research internships

Master classes

- Advanced materials characterization (10h, 2nd year, course, practicals)
- Materials plasticity (10h, 2nd year, course)
- Professional skills (scientific publishing, project management, etc, 18h, 1st and 2nd year, course, practicals)

Taught in the past

- Endogenous petrology (undergraduate, 3rd year in geology, course, practicals)
- Introduction to materials science (master, 1st year, course)
- Scientific computing (master 1st year, course)
- Physics applied to natural sciences (undergraduate, 1st year, course, practicals, labs)
- Newtonian mechanics (undergraduate, 1st year, course)
- Wave and vibrations (undergraduate, 2nd year, practicals, labs)
- Continuum mechanics (undergraduate, 2nd and 3rd year, labs, courses)
- Information technology (undergraduate, 1st year, practicals)
- Physics for physicians (undergraduate, 1st year, practicals)

Outreach

- Approximately 4 ½-days/y in local high-school with the “Physique itinérante” program of Université de Lille until 2020

Graduate courses and summer schools

- 8 classes at various levels (full list below)

SEMINARS AND COMMUNICATIONS

SEMINARS: 23

1. Department of Geosciences at Stony Brook University Seminar, Stony Brook, NY, USA, Nov 2022
2. High Energy Density Science Center Seminar Series, Livermore, CA, United States, Mar 2021
3. Earth Section Seminar, Scripps Institution of Oceanography, San Diego, CA, United States, Feb 2020
4. Photon Science Seminar, SLAC National Accelerator Laboratory, Menlo Park, CA, United States, Jan 2020
5. Department of Geology, University of Maryland, United States, July 2017
6. Geophysical Laboratory, Carnegie Institution of Washington, United States, July 2017
7. Institute of Geophysics, ETH Zürich, Switzerland, November 2016
8. Institut Jean Lamour, Université de Lorraine, Nancy, France, June 2016
9. Laboratoire de Géologie, Ecole Normale Supérieure, Paris, France, November 2015
10. Center for High Pressure Science & Technology Advanced Research, Shanghai, China, May 2015
11. Earth, Environmental and Planetary Sciences, Brown University, Providence, RI, USA, April 2015
12. Institut für Mineralogie, Universität Münster, Germany, October 2014
13. Géosciences Montpellier, France, January 2013
14. Bayerisches Geoinstitut, University of Bayreuth, Bayreuth, Germany, May 2012
15. Inst. für Geochemie und Petrologie, ETH Zürich, Switzerland, March 2010
16. Laboratoire de Géophysique Interne et de Tectonophysique, Grenoble, France, October 2009
17. Geodynamic Research Center, Ehime University, Matsuyama, Japan, January 2009
18. Laboratoire Magmas et Volcans, Université Blaise Pascal de Clermont-Ferrand, France, January 2008
19. Laboratoire de Structures et Propriétés de l'Etat Solide, Université des Sciences et Technologies de Lille, France, February 2007
20. Laboratoire de Géologie de l'Ecole normale supérieure, Paris, France, November 2006
21. Berkeley Seismological Laboratory, University of California, Berkeley, USA, November 2004
22. Laboratoire de Structures et Propriétés de l'Etat Solide, Université des Sciences et Technologies de Lille, France, December 2003
23. Laboratoire des Sciences de la Terre, Ecole Normale Supérieure de Lyon, France, 2002

TEACHING IN SUMMER SCHOOLS AND EQUIVALENT: 8

1. "Métallomix" class of Paris Sciences Lettres university group, *Déformation des métaux hexagonaux. Du noyau terrestre à l'application*, Paris, France, March 2022
2. Workshop on *Texture Analysis Using the Rietveld Method from Synchrotron X-ray Diffraction Data*, HPSTAR, Shanghai, China, 19-20 May, 2015
3. *Méthodes d'analyse des minéraux et matériaux*, Société Française de Minéralogie et Cristallographie, Paris, France, 20-21 October 2014
4. *Ecole Prédoctorale sur la Terre Interne*, École de Physique des Houches, France, 6-17 Octobre 2014
5. *Ecole doctorale observatoire de Strasbourg*, France, March 2011
6. *International School of Crystallography*, Erice, Sicile, Italy, 4-14 June 2009
7. *Structure et dynamique du manteau profond*, École de Physique des Houches, France, 12-17 October 2008
8. *Textures and Microstructures in the Earth Sciences*, DFH-UFA Summer School, Freiberg, Germany, July 2005

INVITED PRESENTATIONS IN INTERNATIONAL CONFERENCES: 28

1. S. Merkel, Microstructures in Earth mantle minerals: using MTEX to track grains and physical properties of polycrystals in high pressure experiments, Freiberg MTEX Workshop 2022, Online, Mar 2022
2. S. Merkel, Phase transitions in the lowermost mantle: effect on microstructures and seismic observables, Global Scale Seismic Imaging and Dynamics of the Earth's Mantle, Collège de France, Paris, France, Oct 2021
3. S. Merkel, Phase transitions in the mantle, CREEP Innovative Training Network Final Workshop, Les Houches, France, January 2019
4. S. Merkel, The Earth's inner core: a mineral physics perspective, SEDI (Study of the Earth's Deep Interior), Edmonton, Canada, July 2018
5. S. Merkel, In-Situ Studies of Microstructures under Deep Earth Conditions: from Texture Analysis to Multigrain Crystallography, ICOTOM International Conference on the Textures of Materials, St George, UT, USA,

November 2017

6. S. Merkel, Stress and microstructures under extreme conditions: advances and opportunities , PETRA IV Workshop: Extreme Conditions Research at the Ultra-Low Emittance Storage Ring PETRA IV, Hamburg, Germany, October 2017
7. S. Merkel, R. Farla, N. Hilairt, Synchrotron-Based Extreme Condition Research Using Large Volume Presses, Research with High Energy X-Rays at Ultra-Low Emittance Sources, Hamburg, Germany, February 2017
8. S. Merkel, Anisotropy and History of the Earth's Inner Core: Forward Models and Input from Mineralogy, Flow in the Deep Earth, Collège de France, Paris, France, December 2016
9. S. Merkel, N. Hilairt, Carlos Tome, Deformation Twinning in Zn under High Pressure and the Effect of c/a Ratio on hcp Metals Plasticity, MRS Fall Meeting, Boston, United States, November 2016
10. S. Merkel, Anisotropy, textures, and slip systems in post-perovskite: experimental approach, ppv@10: a meeting for the 10th anniversary of the discovery of post-perovskite, Bristol, United-Kingdon, June 2014
11. S. Merkel, Extracting of single crystal properties from measurements on polycrystals , Elastic Properties of Iron in Extreme Conditions, Takarazuka, Japan, February 2014
12. S. Merkel, Understanding high pressure plasticity using x-ray diffraction, International Symposium on Plasticity and its Applications, Freeport, Bahamas, January 2014
13. S. Merkel, New experiments for understanding plastic deformation and microstructure under high pressure, European High Pressure Research Group, London, UK, September 2013
14. S. Merkel, C. Nisr, G. Ribarik, T. Ungar, G. Vaughan, P. Cordier, Application of line profile analysis for the study of dislocations in deep Earth minerals, TMS2013, San Antonio, TX, USA, March 2013
15. S. Merkel, Award lecture: 2011 EMU medallist. High pressure plastic behaviour of deep Earth minerals, EMC2012, Frankfurt, Germany, September 2012
16. S. Merkel, Application of Synchrotron Radiation For Understanding The Plastic Properties Of Minerals In The Deep Earth, High Pressure Studies using Synchrotron Radiation: Present and Future, SOLEIL Users' Meeting 2012, Gif-sur-Yvette, France, January 2012
17. S. Merkel, Plasticity under pressure: experiment and models, International Conference of the APS Topical Group on Shock Compression of Condensed Matter, Chicago, IL, USA June 2011
18. S. Merkel, High Pressure Plastic Properties of Hcp Metals: Experiments and Elasto-Plastic Models, TMS 2011 Annual Meeting, San Diego, CA, USA, March 2011
19. S. Merkel, M. Gruson, C.N. Tomé, N. Nishiyama, Y. Wang, Effect of texture on rheological properties: the case of ϵ -Fe, American Geophysical Union fall meeting, San Francisco, CA, USA, December 2009
20. S. Merkel, Plastic properties of deep Earth minerals, Symposium of Japanese-French Frontiers of Science, Shonan Village Center, Kanagawa, Japan, January 2009.
21. S. Merkel, Modeling analysis of the influence of plasticity on x-ray diffraction measurements in high pressure deformation apparatus, Rheology Grand Challenge Workshop on Plastic Deformation of Minerals and the Dynamics of Earth's Deep Interior, MIT, Cambridge, MA, USA, August 2008
22. S. Merkel, High pressure deformation mechanisms from in situ texture measurements, International Conference on the Texture of Materials (ICOTOM), Pittsburgh, PA, USA, June 2008
23. S. Merkel, H.R. Wenk, C. Tomé, Evaluation of stress in high pressure radial diffraction experiments: application to Co, Study of Matter at Extreme Conditions, Miami, FL, USA, April 2007
24. S. Merkel, Plasticity in the diamond anvil cell: implications for deep Earth geophysics, Gordon Research Conference on Research at High Pressure, Biddeford, ME, USA, June 2006
25. S. Merkel, Radial diffraction in the DAC: practical and theoretical considerations, COMPRESS workshop on rheology and elasticity studies at ultrahigh pressures and temperatures, Advanced Photon Source, Argonne National Laboratory, USA, 2005
26. S. Merkel, T. Yagi, N. Miyajima, H.R. Wenk, H.K. Mao, and R.J. Hemley, Deformation of polycrystalline Ca-perovskite up to 50 GPa, American Geophysical Union fall meeting, San Francisco, CA, USA, December 2004
27. S. Merkel, High pressure study of stress, elasticity, and lattice preferred orientations using the diamond anvil cell and x-ray diffraction, IUCr/COMPRES High Pressure Workshop, Non-ambient Crystallography: The Science of Change, Berkeley, CA, USA, December 2003
28. S. Merkel, H.K. Mao, R.J. Hemley , Finite-element modeling of stress and strain in the diamond anvil cell, International Conferences on High Pressure Science and Technology (Airapt), Honolulu, HI, USA July 1999

INVITED PRESENTATIONS IN FRENCH CONFERENCES: 4

1. S. Merkel, Les microstructures de matériaux géophysiques sous l'angle des grands instruments, Matériaux 2018, Strasbourg, France, November 2018
2. S. Merkel, Apports des rayons X à l'étude de microstructures sous haute pression, Colloque Rayons X et Matière, Grenoble, France, Decembre 2015

3. S. Merkel, Études expérimentales de plasticité aux conditions de la terre profonde, MECAMAT, Aussois, France, January 2015
4. S. Merkel, Modèles numériques pour l'évaluation de contraintes résiduelles au sein d'échantillons déformés sous pression : application à la phase hexagonale du cobalt, Forum de technologie des hautes pressions, Batz sur Mer, France, 2008

ORAL COMMUNICATIONS GIVEN IN PERSON: 42

1. S. Merkel, J. Gay, J.-K. Magali, E. Ledoux, M. Krug, J. Chantel, C. Sanchez-Valle, Microstructures and anisotropy in pyrolite at lower mantle pressures and temperatures, AGU fall meeting, Chicago, IL, United States, Dec 2022
2. S. Merkel, M. Baron, J. Chantel, G. Morard, G. Fiquet, C. Prescher, H.-P. Liermann, S. McWilliams, Nouvelles opportunités au laser à électron libre européen pour l'étude de l'intérieur de la terre et des planètes, Matériaux 2022, Lille, France, France, Oct 2022
3. S. Merkel, S. Hok, C. Bolme, D. Rittman, K.J. Ramos, H.J. Lee, B. Nagler, E. Galtier, E. Granados, A. Hashim, W.L. Mao, A.E. Gleason, Crystal Plasticity and Strength of Shock-Compressed hcp-Iron up to 187(10) GPa and 4070(285) K, American Geophysical Union fall meeting, New Orleans, LA, USA, Dec 2021
4. S. Merkel, TIMEleSS tools A toolbox for high pressure multigrain diffraction experiments, NIST Workshop on Technical Aspects of Synchrotron X-ray and Neutron Measurements for Diffraction Microstructure Imaging, Virtual meeting, Jul 2020
5. S. Merkel, S. Hok, C. Bolme, A.E. Gleason, W.L. Mao, Understanding strength and texture in Fe at planetary core pressures and temperatures: insights from laser compression experiments, EGU General Assembly, Virtual meeting, May 2020
6. S. Merkel, Phase transitions in the lowermost mantle: Effects on microstructures and seismic reflections, Deep Earth Mini Symposium, Münster, Germany, November 2019
7. S. Merkel, C. Langrand, S. Durand, D. Andrault, Z. Konôpková, N. Hilairret, and C. Thomas, Kinetics and detectability of the bridgmanite to post-perovskite transformation in the Earth's D" layer, EGU General Assembly, Vienna, Austria, April 2019
8. S. Merkel, C. Tomé, N. Hilairret, Les Macles Androgynes du Zinc, Matériaux 2018, Strasbourg, France, November 2018
9. S. Merkel, La transformation perovskite / post-perovskite dans la couche D": cinétique et microstructures, Journées du Programme National de Planétologie, Nice, France, September 2018
10. S. Merkel, C. Langrand, N. Hilairret, Transformations de phase à l'interface noyau-manteau, Réunion des Sciences de la Terre, Lille, France, Octobre 2018
11. S. Merkel, C. Langrand, A. Rosa, V. Svitlyk, D. Dobson, N. Hilairret, 3D-XRD Study of Phase Transformation Microstructures in Deep Earth Minerals, 3D-MS, Elsinor, Denmark, June 2018
12. S. Merkel, N. Hilairret, C. Tomé, The Androgynous Twins of Zinc, ICOTOM International Conference on the Textures of Materials, USA, November 2017
13. C. Langrand, N. Hilairret, A. Rosa, V. Svitlyk, D. Dobson, S. Merkel, Study Of Perovskite / Post-Perovskite Phase Transformation Mechanism By Using Multigrain Crystallography, High Pressure Mineral Physics Seminar, Saint Malo, France, September 2017
14. S. Merkel, C. Langrand, N. Hilairret, Z. Konopkova, D. Andrault, Kinetics Of Bridgmanite To Post-Perovskite Transition in $(\text{Mg}_{0.85}, \text{Fe}_{0.15})\text{SiO}_3$, American Geophysical Union fall meeting, San Francisco, CA, USA, December 2016
15. A. D. Rosa, N. Hilairret, S. Ghosh, J. P. Perrillat, G. Garbarino, S. Merkel, Oriented growth and grain size reduction during phase transitions in hydrous Mg_2SiO_4 : Implications for slab strength variations at transition zone depth, European High Pressure Research Group, Bayreuth, Germany, September 2016
16. S. Merkel, A. Lincot, S. Petitgirard, Variant selection in the bcc-hcp transition in Fe, European High Pressure Research Group, Bayreuth, Germany, September 2016
17. S. Merkel, N. Hilairret, R. McCabe, C. N. Tomé, Cyclic response of Zn under high pressure and the effect of c/a ratio on hcp metals plasticity, MecaSens, Grenoble, France, Septembre 2015
18. S. Merkel, A. Lincot, P. Cardin, R. Deguen, A self-consistent model of inner core anisotropy, PURE 2015, Londres, Royaume-Uni, Septembre 2015
19. S. Merkel, P. Raterron, N. Hilairret, Creep of minerals : quantifying effects of pressure and grain boundary vs. intracrystalline processes up to 10 GPa and 1600 K in olivine, CREEP 2015, Toulouse, France, June 2015
20. S. Merkel, A. Malpot, A. Rosa, H. P. Liermann, 3D-XRD Investigation of the High Pressure α - ω Transformation in Polycrystalline Titanium, International Congress on 3D Materials Science, Annecy, France, June 2014
21. S. Merkel, A. Lincot, P. Cardin, Inner core anisotropy: scaling single-crystals elastic properties to seismic measurements, AGU Fall Meeting 2013, San Francisco, CA, USA, December 2013
22. S. Merkel, A. Lincot, S. Petitgirard, P. Cardin, BCC-HCP Transition in Fe: Effect of Stress on Transition

- Mechanisms and Lattice Preferred Orientations, TMS, San Antonio, TX, USA, March 2013
23. S. Merkel, A. Lincot, S. Petitgirard, P. Cardin, Effects of the bcc-hcp transition on textures and anisotropy in Fe, American Geophysical Union fall meeting, San Francisco, CA, USA, December 2012
 24. S. Merkel, C. Nisr, G. Ribárik, T. Ungár, G. Vaughan, P. Cordier, In situ experimental study of dislocations in minerals at high pressure, American Geophysical Union fall meeting, San Francisco, CA, USA, December 2011
 25. S. Merkel, C. Nisr, P. Cordier, G. Ribarik, T. Ungar, G. Vaughan, In situ 3D X-ray diffraction study of stresses and dislocations in polycrystals under high pressure: application to MgGeO₃ post-perovskite at 80 GPa, MecaSens, Hambourg, Germany, September 2011
 26. S. Merkel, M. Gruson, C.N. Tomé, N. Nishiyama, Y. Wang, Textures, contraintes, et mécanismes de déformation plastique dans le fer e, Plasticité, Toulouse, France, March 2010
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