

Curriculum Vitae

Sonja Maria Aulbach

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EDUCATION AND CAREER (FIRST-GENERATION ACADEMIC)

Since Apr 2022	Heisenberg fellow of the German Research Foundation , Department of Geosciences, Goethe-Universität Frankfurt (Germany)
Apr 2014 – Mar 2022	Research fellow of the German Research Foundation , Department of Geosciences, Goethe-Universität Frankfurt (Germany)
Oct 2009 - Mar 2014	Research assistant , Department of Geosciences, Goethe-Universität Frankfurt (Germany)
Jun 2006 - Nov 2006 & Mar 2007	Visiting scientist , Department of Terrestrial Magnetism, Carnegie Institution of Washington (USA)
Jun 2006 - Sep 2009	Postdoctoral Research Fellow , Department of Earth and Atmospheric Sciences, University of Alberta (Canada)
Jun 2005 - May 2006	Postdoctoral Research Fellow , Department of Geology, University of Maryland (USA)
Feb 2000 - Apr 2005	Doctoral student , Department of Earth and Planetary Sciences, Macquarie University (Australia)
Jan 1997 - Dec 1999	Student assistant , Institute of Mineralogy, Goethe-Universität, Frankfurt (Germany)
Aug 1996 - Jun 1999	Masters student , Institute of Mineralogy, Goethe-Universität Frankfurt (Germany)
Oct 1994 - Jul 1996	Bachelor student , Institute of Geology Goethe-Universität Frankfurt (Germany)
Pre-1994	Apprenticeship (certified by the International Trade Chamber) and work experience as business administrator

FUNDED PROJECTS - GERMAN RESEARCH FOUNDATION

As principal investigator

Apr 2022-Mar 2025	Complementary insights from orogenic and xenolithic eclogites as recorders of mass transfer in subduction zones: A unique case study from the Farallon plate (DFG AU 356/13) – EUR 364,883
Apr 2022-Mar 2025	Crust-mantle evolution and deep volatile cycles through time (DFG AU 356/12, Heisenberg) – EUR 349,900
Apr 2020-Mar 2022	Water in mantle eclogite: Origin, distribution and physical consequences (DFG AU356/11) – EUR 212,500
Apr 2017-Mar 2020	Cratonic mantle eclogites as palaeodynamic archives (DFG AU356/10) – EUR 338,150

Curriculum Vitae

- Apr 2014-Mar 2017 Cratonic granulite, pyroxenite and eclogite xenoliths: Archives of continental crust evolution and terrestrial trace element cycling (DFG AU356/8) – **EUR 282,650**
- Jan 2012-Dec 2013 A multiple isotope and trace element approach to constrain the oxygenation and metal cycling of 3.5 to 3.2 Ga paleo-oceans (DFG AU356/7) – **EUR 168,539**
- Aug 2011-Mar 2012 Tracing Lithosphere formation and evolution with highly siderophile elements and Os isotopes (DFG AU356/6) – **EUR 22,930**
- Aug 2010-Jul 2011 Constraints on diamond formation and craton evolution from S isotopes and trace element contents in diamond sulfides (DFG AU356/3) – **EUR 12,730 + 1,701.92**

As proposal author and co-investigator

- Aug 2015-Dez 2016: Peridotit-Xenolithe als Schlüssel zum Verständnis von starker Verarmung und Wiederanreicherung der Mantellithosphäre unter Grönland (DFG GE1152/9) – **EUR 36.650**
- Jul 2014-Jun 2015: A multiple isotope and trace element approach to constrain the oxygenation and metal cycling of 3.5 to 3.2 Ga paleo-oceans (DFG BR1012/41) – **EUR 73.740**

As co-investigator

- 2011-2014 Lithosphäre in Zeit und Raum - zeitliche und (isotopen-)geochemische Entwicklung von überlagernden Krusten- und Mantelsegmenten

FUNDED PROJECTS - OTHER

- 2023 Constraining rift-related diffuse mantle-CO₂ flux in the Eifel Volcanic Field – proposal designed to foster inter-institutional and interdisciplinary collaboration, funded by Forschungsinitiative Rheinland-Pfalz awarded to “Earth System Critical Thresholds: Earth CriSys” led by Philip Pogge von Strandmann – **EUR 9.240**
- 2021 Ancient oceanic crusts as tracers of terrestrial mantle evolution: Ages and mantle source fingerprints from centimetric mantle eclogite xenoliths – Europlanet2024 Research Infrastructure (20-EPN-014) – research stay at the Geology and Geochemistry radiogenic and non-traditional stable Isotope Facility-GGIF (NL)

AWARDS AND HONOURS

- 2024 Selected 2024 **University of Vienna Visiting Professor**, Vienna, Austria (host professor: Rainer Abart)
- 2023 Solicited Speaker, Gordon Research Conference on Timing, Tempo and Drivers of Lithospheric Evolution, Mount Snow, USA
- 2023 Keynote Speaker, International Diamond School, Bressanone, Italy
- 2022 Selected for 2022 **Sapienza University Visiting Professor Call**, Rome, Italy (host professor: Vincenzo Stagno)

Curriculum Vitae

- 2022 **Heisenberg Fellowship** of the German Research Foundation (enabling outstanding researchers who meet all requirements for appointment to a professorship to prepare for a senior academic role while continuing their research)
- 2022 Keynote speaker, Congresso Società Geologica Italiana, Torino, Italy
- 2022 Symposium speaker, Frontiers in Mineralogy celebrating the 100th Annual Conference of the German Mineralogical Society DMG, GeoMinKöln, Cologne, Germany
- 2022 Keynote speaker, 23rd V. M. Goldschmidt Conference, Hawaii, USA
- 2022 Keynote speaker, 21st International Eclogite Conference, Lyon, France
- 2021 Recipient of the 2021 **Paul Gast Lecture Award** (bestowed by the European Association of Geochemistry and the Geochemical Society to a mid-career scientist for outstanding contributions to geochemistry)
- 2019 Solicited Speaker, Centennial Central at AGU Fall Meeting: Ingredients for Life, San Francisco, USA
- 2018 Solicited Speaker, Gordon Research Conference on Deep Carbon Science in the Context of Geologic Time, Smithfield, USA
- 2017 Keynote speaker, 27th V. M. Goldschmidt Conference, Paris, France
- 2016 Keynote speaker, 2nd European Mineralogical Conference, Rimini, Italy
- 2014 „2014 Exceptional Reviewer“, GEOLOGY
- 2012 Certificate of Excellence in Reviewing, Chemical Geology
- 2011 Keynote speaker, International Conference on Craton Formation and Destruction, Beijing, China
- 2010 Travel Grant under the Frankfurt Geosciences Frauenförderplan
- 2009 „2009 Exceptional Reviewer“, GEOLOGY
- 2008 Keynote speaker, 18th V. M. Goldschmidt Conference, Vancouver, Canada
- 2005 **Feodor Lynen-Stipendium**, Alexander von Humboldt-Stiftung
- 2003 **PGRF Macquarie University Postgraduate Research Fund**, Australia
- 2003 8th International Kimberlite Conference (Victoria, Canada) travel grant
- 2002 12th V. M. Goldschmidt Conference (Davos, Switzerland) travel grant
- 2001 **PGRF Macquarie University Postgraduate Research Fund**, Australia
- 2000 Commendation, Deputy Vice Chancellor Research, Macquarie University, Australia
- 1999 **IPRS International Postgraduate Research Scholarship**, Australia
- 1999 **MUIPRA Macquarie University International Postgraduate Research Award**, Australia
- 1999 DAAD Fellowship for studies abroad (declined for Research Award and Scholarship to Macquarie University)

Curriculum Vitae

TEACHING

Full lectures and seminars, Goethe-Universität Frankfurt (Germany)

SS 2024	Analytical methods (BSc module): contribution with 5 lectures on mass spectrometry and data quality assurance
WS 2023/24	Analytical methods (BSc module): contribution to the practical by demonstrating principles of column chemistry
SS 2023	Full short course (MSc module): (Micro)analytical constraints on how Earth became habitable: critical events in the first two billion years
WS 2022/23 & 23/24	Full short course (MSc module): (Micro)analytical constraints on the origin, fate and significance of oceanic crust
2023, 2021, 2018	Short course – Radiogenic and non-traditional isotopes: Analytical methods and applications (two lectures - subjects: Trace elements and PGE-Re-Os), Goethe University Frankfurt (Germany)
Oct 2009-Mar 2014	Introduction to geochemistry Introduction to isotope geochemistry Introduction to mineralogy (with 1 co-lecturer) Organiser of the analytical methods lecture series including 3-4/15 lectures and practical (sample preparation and analysis by ICPMS) Analytical methods short courses (with 3 co-lecturers) Organiser of the 2 nd geosciences seminar, supervision of 3-4 student papers Introduction to environmental sciences, 1 lecture

Other

2016	Full short course – Continental crust formation and evolution, University of Bologna (Italy)
2009	Full graduate seminar EAS 536 – Mineralogy-Petrology-Geochemistry (subject: Silicate Earth - Composition, Structure, Evolution), University of Alberta (Canada)
2007-2008	Lecture (one-off) EAS 436/586 – Petrogenesis of Igneous and Metamorphic Rocks (subject: eclogites), University of Alberta (Canada)
2006	Lecture (one-off) GEOL 489H – Recent Advances in Geology (subject: diamonds), University of Maryland (USA)
2005	Lecture (one-off) GEOL 443 – Petrology, University of Maryland (USA)
2005	Co-ordinator geochemistry colloquium, University of Maryland (USA)

Curriculum Vitae

1998 Practical – Thin section microscopy, Goethe-Universität Frankfurt

STUDENT SUPERVISION

Supervised bachelor theses

Jul 2017	Raman und CL Untersuchungen von Juina Diamanten mit potentiell sublithosphärischem Ursprung – Antonia Ashauer (co-supervised)
Jul 2014	Mineralogy and geochemistry of sulphides in Eastern Alpine peridotites (Ulten-Nonsberg zone) – Lucas Dingeldein
Apr 2013	Platingruppenelemente und Re in Schwarzschiefern: Entwicklung der Methode und Anwendung auf Kupferschieferproben aus der Lausitz – Dominik Gudelius
Jun 2012	Sulfide minerals in the Spremberg-Graustein (Lusatia) Cu deposit - a petrographic and geochemical reconnaissance study – Daniel Kummert
Apr 2012	Institution of a method to concentrate and measure PGEs and Re-Os in geological materials by ICPMS - Haruko Gladys Gölz Carnero
Aug 2011	Melting of opx-rich peridotite – an experimental study – Natalie Gaspers (Aug 2011)
Aug 2011	Trace Elements in Base Metal Sulfides of the Spessart Ore District – Johannes Hofmann

Supervised masters' theses and associated modules

From Jan 2023	Insights from metabasalts of the Farallon plate on element cycling in subduction zones – Siqi Hao
Dec 2015	Metasomatism in the mantle wedge: new insights from Eastern Alpine peridotites – Dominik Gudelius
Jan 2014	Geochemical constraints on the nature and effects of Kupferschiefer-related multi-stage metal enrichment in the Sangerhausen Basin – Johannes Hofmann
Oct 2013	Ti phases in cratonic granulite xenoliths: recorders of lower crustal formation and evolution – Bibiana Förster

(Co-)Supervised doctoral theses

Commencing 05/24	Stable isotope perspectives on volatile cycles in Archaean subduction zones: Insights from cratonic eclogite xenoliths – Yuanru Qu, visiting PhD student. Supervision during a 12-month scholarship from China University of Geosciences at Beijing (primary supervisor: Prof. Sheng-Ao Liu)
Aug 2022-Nov 2022	Geochemistry of ultramafic rocks in the Swedish and Norwegian Caledonides – Daniel Buczko, visiting PhD student. Supervision

Curriculum Vitae

	during a 4-month DAAD scholarship (primary supervisor: Prof. Magdalena Matusiak-Małek, Wrocław University)
Jan 2019-Apr 2019	Geochemistry of basalt-borne mantle xenoliths from Vogelsberg (Germany) – Małgorzata Ziobro, visiting PhD student. Supervision during a 4-month DAAD scholarship (primary supervisor: Prof. Jacek Puziewicz, Wrocław University)
Oct 2018-Sep 2019	The lithospheric mantle beneath the NE North China Craton – Abing Lin, visiting PhD student. Supervision during a 12-month scholarship from China University of Geosciences at Wuhan (primary supervisor: Prof. Jian-Ping Zheng)
2018	Depletion and metasomatic enrichment of the deep mantle wedge - The Ulten Zone case – Bibiana Förster. Co-supervision (primary supervisor: Prof. Roberto Braga, University of Bologna)
2016	A multiple isotope and trace element approach to constrain the oxygenation and metal cycling of 3.5 to 3.2 Ga paleo-oceans – Philipp Rammensee
2014	Characteristics of the continental lithospheric mantle beneath the Greenland craton – Jing Sun, visiting PhD student. Supervision during a 12-month DAAD scholarship (primary supervisor: Prof. Chuan-Zhou Liu, Chinese Academy of Sciences, Beijing)

Postdoctoral research mentor

Since Aug 2022	Dr. Johannes Pohlner (Goethe University Frankfurt): Complementary insights from orogenic and xenolithic eclogites as recorders of mass transfer in subduction zones: A unique case study from the Farallon plate
Since 2019	Dr. Abing Lin (Northwest University, Xi'an, China): Mantle evolution beneath northwestern China
Since 2019	Dr. Denis Mikhailenko (Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia): Eclogite petrogenesis
2016-2019	Dr. Melesse Alemayehu (Adama Science and Technology University, Ethiopia): Plume-lithosphere interactions in the East African Rift

PROFESSIONAL AFFILIATIONS

2006-present	Member, American Geophysical Union
2005-present	Member, Geochemical Society

SERVICE TO THE SCIENTIFIC COMMUNITY

Committees

2015-2019	Co-Chair of the Steering Committee Officers and Research Partner - Diamonds and Mantle Geodynamics of Carbon (DMGC) consortium funded by the Deep Carbon Observatory
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Curriculum Vitae

2015-2019	Science Steering Committee - Reservoirs & Fluxes (RF) Community in the Deep Carbon Observatory
2019	PhD Examiner – Angus Fitzpayne, University of Melbourne

Editorial responsibilities

Since April 2022	Co-Editor-in-Chief Chemical Geology
2021	Guest editor Lithos Special Issue: Origin and Evolution of Continental Mantle Lithosphere and its Resource Endowment (Managing Guest Editor: Jose-Maria Gonzalez-Jimenez)
2020	Guest editor Geochimica et Cosmochimica Acta Special Issue: The continents: Origin, evolution and interactions with other reservoirs (Managing Guest Editor: Fang-Zhen Teng)
Since 2019	Member of the Journal of Petrology Advisory Board
Since 2019	Member of the Precambrian Research Editorial Board
2015	Guest editor Tectonophysics Special Volume: Lithosphere Evolution (Managing Guest Editor: Gianluca Bianchini)
2009	Guest editor Lithos Special Volume: Proceedings of the 9th International Kimberlite Conference (Managing Guest Editor: Stephen Foley)

Journal reviews (>200)

American Mineralogist, Canadian Mineralogist, Chemical Geology, Communications Earth & Environment, Contributions to Mineralogy and Petrology, Earth and Planetary Science Letter, Economic Geology, Earth Science Reviews, European Journal of Mineralogy, Frontiers in Earth Science, G-Cubed, Geochemical Perspective Letters, Geochimica et Cosmochimica Acta, Geology, GeoResJ, Geological Magazine, Geoscience Frontiers, Gondwana Research, Journal of Metamorphic Geology, Journal of Asian Earth Science, Journal of Geophysical Research, Journal of Petrology, Lithos, Journal of Raman Spectroscopy, Minerals, Mineralogical Magazine, Mineralogy and Petrology, National Science Review, Nature, Nature Communications, Nature Geoscience, Precambrian Research, Science, Tectonophysics, Terra Nova, The Geological Society Special Publications

Proposal reviews (>20)

German Research Foundation (DFG), European Research Council (ERC), Fonds zur Förderung der wissenschaftlichen Forschung (FWF-Austria), Irish Research Council, National Science Foundation (NSF-USA), National Research Foundation (NRF-South Africa), National Aeronautics and Space Administration (NASA),

Curriculum Vitae

Natural Environment Research Council (NERC-UK),
NSERC Canada, Netherlands Organisation for Scientific
Research (NWO), Swiss National Science Foundation
(SNSF)

Conference activities

For 2024	Scientific Themes convener: Cratonic Mantle - Petrology, Geochemistry and Geophysics - 12th International Kimberlite Conference (Yellowknife, Canada)
For 2024	Student Awards Chair - 12th International Kimberlite Conference (Yellowknife, Canada)
Since 2019	Member of the International Kimberlite Conferences Advisory Committee
2023-21, 2019-17	Judge, Outstanding Student Poster and PICO (OSPP) Award contest - EGU General Assembly (Vienna)
2019	Theme Chair (Earth's Lithosphere Formation, Evolution and Recycling) - Goldschmidt (Barcelona, Spain)
2017	Subcommittee member: Financial Support, Student Awards - 11th International Kimberlite Conference (Gaborone, Botswana)
2008	Subcommittee member - 9th International Kimberlite Conference (Frankfurt, Germany)
2008-2024	Session (co)convener for 9 sessions at Goldschmidt, 11 sessions at European Geosciences Union General Assembly, 1 session each at American Geophysical Union Fall Meeting, European Mineralogical Conference, General Meeting of the International Mineralogical Association, International Kimberlite Conference, and Orogenic Lherzolite Conference

Invited presentations at colloquia, seminars, shortcourses and symposia

2024	University of Vienna, Austria
2023	Sapienza Università di Roma, Italy
2021	Universität Innsbruck, Austria
2021	Deutsches GeoForschungsZentrum, Germany, seminar on „Rifts and Margins“ (virtual)
2021	University of California at Santa Barbara, USA (virtual)
2019	Freie Universität Berlin, Germany
2019	Deep Carbon 2019 Conference, Washington DC, USA
2019	Reservoirs and Fluxes Symposium, Washington DC, USA
2019	Universität Wien, Austria
2018	Bayerisches Geoinstitut Bayreuth, Germany
2017	Third Deep Carbon Observatory International Science Meeting, St. Andrews, UK
2017	Lamont-Doherty Earth Observatory, Palisades, USA
2016	Arizona State University, USA (virtual)
2015	Scripps Institution of Oceanography, San Diego, USA

Curriculum Vitae

2015	University of Science and Technology of China, Hefei, China
2015	ISTO, Université d'Orléans, France
2014	Johannes Gutenberg University of Mainz, Germany
2013	University of Bergen, Norway
2013	Technical University Graz, Austria
2013	De Beers Exploration Office, Johannesburg, South Africa
2011	University of Maryland, College Park, USA
2011	Institut de Physique du Globe de Paris, France
2011	Johannes Gutenberg University Mainz, Germany
2011	Westfälische Wilhelms-Universität Münster, Germany
2011	Chinese Academy of Geological Sciences Beijing, China
2011	Virginia Tech, Blacksburg, USA
2010	Centre National de la Recherche Scientifique, Nancy, France
2008	University of Alberta, Edmonton, Canada

PUBLIC OUTREACH

2023	Represented Geosciences Frankfurt on 1/2 “Physical Sciences Days” (Tag der Naturwissenschaften) for high schoolers
2023	Contribution to Goethe-University’s Forschung Frankfurt “Die turbulente Kindheit der Erde” (written by a science journalist)
2022	Decoding Deep Earth with Trace Elements and Isotopes – FIERCE Symposium, Goethe University Frankfurt
2021	Contribution to Goethe-University’s UniReport “How Earth became habitable” (written by a science journalist)
2010/11	CyberMentor (E-Mentoring-Programme for girls and young women to foment interest for and participation of women in mathematics, informatics, natural sciences and technical sciences)
2010	Speaker at the “Radiometrisches Seminar Theuern” (public seminar on radioactivity-related topics held by Prof. Dr. Henning von Philipsborn)

ESTABLISHMENT OF LABORATORY AND ANALYTICAL ROUTINES

2023 (in progress)	Institution of column chemistry and mass spectrometry routines for the accurate and precise determination of Mg and Zn isotope ratios by multicollector ICPMS (Goethe-University Frankfurt, Germany)
2013	Institution of column chemistry and mass spectrometry routines for the accurate and precise determination of PGE concentrations and Re-Os isotope systematics in geological samples by isotope dilution (multicollector) ICPMS (Goethe-University Frankfurt, Germany)

Curriculum Vitae

2010	Institution of analytical routines to measure trace elements in sulphide minerals by laser ablation ICPMS (Goethe-University Frankfurt, Germany)
2010-2012	Organisation of laboratory safety documentation and standard operating procedures (Goethe-University Frankfurt, Germany)
2006-2007	Institution of column chemistry to separate Pb, Re, Os and transition metals in ultra-small samples (single sulfide grains) (University of Alberta, Canada)
2005	Institution of column chemistry to separate Nd and Sr in combination with Li; institution of the analytical protocol to analyse Nd isotopes by multicollector ICPMS (University of Maryland, USA)

COLLABORATIONS (LAST 5 YEARS)

- Dr. Roberto Braga* (Bologna University): Metasomatic processes in eclogite-facies rocks from the Ulten Zone, Italy
- Prof. Ntaflos, Abart, Dr. Casetta* (University of Vienna): Characterisation of continental crust and mantle
- Prof. Vincenzo Stagno* (Sapienza University Rome): Speciation and mobility of volatiles in the continental and convecting mantle
- Prof. Ronny Schoenberg and Dr. Ilka Kleinhanns* (University of Tuebingen): Cr isotope geochemistry of eclogite xenoliths as probes of subducted oceanic crust
- Prof. Jacek Puziewicz, Dr. Magda Matusiak-Matek* (University of Wrocław): Origin and evolution of the lithospheric mantle beneath Variscan Europe, Scotland and the Cameroon Volcanic Line
- Dr. Jan Schoenig* (University of Goettingen): Detrital rutile as a sedimentary record of ultra-high-pressure metamorphism
- Prof. Dan Schulze* (University of Toronto) and *Prof. Sarah Penniston-Dorland* (University of Maryland): Petrogenesis of xenocrysts and xenoliths from various cratons, and of eclogites and omphacitites from the Navajo Volcanic Field
- Prof. Sarah Penniston-Dorland* (University of Maryland): Petrogenesis of orogenic amphibolites and eclogites from the Franciscan Complex
- Prof. Roland Stalder* (University of Innsbruck) and *Prof. Rondi Davies* (Queensborough Community College): Water in nominally anhydrous minerals from cratonic xenoliths and xenocrysts
- Dr. Craig O'Neill, Dr. Huaiyu Yuan* (Macquarie University): Mantle structure and dynamics
- Prof. Greg Yaxley* (Australian National University) and *Dr. Sebastian Tappe* (University of Johannesburg): Lithospheric mantle beneath W Greenland
- Dr. A-Bing Lin* (Northwest University Xi'an): Lithospheric mantle beneath E China
- Prof. Thomas Stachel, Larry Heaman, Tom Chacko, Dr. Richard Stern* (University of Alberta, Canada), *Dr. Steven Shirey* (Carnegie Institution of Washington): Origin and evolution of the continental lithosphere from diamonds, their inclusions and crust and mantle xenoliths
- Dr. Malcolm Massuyeau* (Universität Münster), *Dr. Joshua Garber* (Pennsylvania State University): Petrologic-thermophysical-thermodynamic modelling constraints on melt transfer in the mantle and eclogite geophysical properties
- Dr. Andrey Korsakov, Dr. Denis Mikhailenko* (Russian Academy of Sciences): Origin and evolution of eclogite and pyroxenite xenoliths from the Siberian craton

Curriculum Vitae

Prof. Fanus Viljoen (University of Johannesburg), *Prof. Dorrit Jacob* (Macquarie University): Origin and evolution of eclogite and pyroxenite xenoliths from the Kaapvaal craton

Dr. Andrea Giuliani (ETH Zurich), *Dr. Marco Fiorentini* (University of Western Australia): Evolution of the continental lithospheric mantle and relevance to ore formation