Curriculum Vitae
Dr. Julien M. ALLAZ

Personal details

Work:	ETH Zürich Departement Erdwissenschaften Institut für Geochemie und Petrologie Clausiusstrasse 25 8092 Zürich (Switzerland)	Private:	Frohburgstr. 303 8057 Zürich	Rue du Four 5 1446 Baulmes

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URLs:	https://n.ethz.ch/~jallaz/		http://www.geoloweb.ch/ *(personal website)*
Office	+41 44 632 37 20		
Mobile	+41 79 659 66 93		

Date and place of birth	30 April 1979 in Orbe (Vaud, Switzerland)
Citizenship	Swiss citizen, native of Villars-le-Terroir (Vaud, Switzerland)
Language skills	French (native), English (fluent), German (intermediate)

Education

2003 – 2008	PhD in geology, University of Bern, Switzerland.
1998 – 2003	Undergraduate & graduate studies in geology, University of Lausanne, Switzerland.
1994 – 1998	Matura (A-level) in Mathematic and Sciences, Yverdon-les-Bains, Switzerland.

Post-graduate appointment

Oberassistant (2018 – present)	ETH Zürich (Switzerland)
Research Associate (2012 – 2018)	University of Colorado, Boulder (USA)
Postdoctoral Scholar (2009 – 2012)	University of Massachusetts, Amherst (USA)
Research Assistant (2008)	University of Bern (Switzerland), electron microprobe manager *(ad interim)*

ETH SEM-EPMA laboratory: collaborations over the past years

- At **D-ERDW**: Prof. Olivier ***Bachmann***, Prof. Whitney ***Behr***, Prof. Cyril ***Chelle-Michou***, Dr. Andrea ***Galli***, Prof. Murakami ***Motohiko***, Prof. Martin ***Saar***, Prof. Max ***Schmidt***, Prof. Maria ***Schönbächler***, Prof. Peter ***Ulmer***, Prof. Derek ***Vance***.
- Other departments at ETH: **ScopeM** (Karsten Kunze, Luiz Morales), **D-CHAB** (Prof. Jean-Christophe Leroux, PhD student Valentine Berger), **D-MAVT** (Dr. Christopher Schneeberger), **D-BAUG** (Dr. Tobias Kieplinger, PhD student Kunkun Tu).

Peer-reviewed publications

 # MSc or PhD student

L. Fonseca Teixeira[#], J.Troch, **J. Allaz**, O. Bachmann (2022). *Magmatic to hydrothermal conditions in the transition from the A-type Pikes Peak granite (Colorado) to its related pegmatite*, Frontiers in Earth Sciences, in press.

K. Tu[#], S. Büchele, S. Mitchell, L. Stricker, C. Liu, C. Goldhahn, **J. Allaz**, […] Keplinger, T. (2022). *Natural Wood-Based Catalytic Membrane Microreactors for Continuous Hydrogen Generation.* ACS Applied Materials and Interfaces, 14(6), 8417–8426. https://doi.org/10.1021/acsami.1c22850

J.J. Donovan, **J.M. Allaz**, A. von der Handt, G.G.E. Seward, O. Neill, K. Goemann, J. Chouinard, P.K. Carpenter (2021). *Quantitative WDS compositional mapping using the electron microprobe.* American Mineralogist, *106*(11), 1717–1735. https://doi.org/10.2138/am-2021-7739

R.G. Popa[#], P. Tollan, O. Bachmann, V. Schenker, B. Ellis, **J.M. Allaz** (2021). *Water exsolution in the magma chamber favors effusive eruptions: Application of Cl-F partitioning behavior at the Nisyros-Yali volcanic area.* Chemical Geology, 570. https://doi.org/10.1016/j.chemgeo.2021.120170

E.S. Bullock, W.O. Nachlas, O.K. Neill, A. von der Handt, **J.M. Allaz** (2021) *The FIGMAS online database of standards and reference materials - an update.* Microscopy and Microanalysis, 27(S1), 1572–1573. https://doi.org/10.1017/S1431927621005791

J.M. Allaz, M.J. Jercinovic, M.L. Williams (2020). *U-Th-Pb(total) dating of REE-phosphate by electron microprobe: review and progress.* IOP Conference Series: Materials Science and Engineering, 891(1). https://doi.org/10.1088/1757-899X/891/1/012001

J.M. Allaz, J.R. Smyth, *R.E. Henry*[#], C.R. Stern, P. Persson, J.J. Ma, M.B. Raschke (2020), *Beryllium-silicon disorder and rare earth crystal chemistry in gadolinite from the White Cloud pegmatite, Colorado, USA.* Canadian Mineralogist, 58(6), 829–845. https://doi.org/10.3749/CANMIN.1900084

J. M. **Allaz**, *Popa, R.-G.*[#], Reusser, E., & Martin, L. (2019). *Electron Microprobe Analysis of Minor and Trace Elements in Beam Sensitive Materials: How Far Can We Go?* Microscopy and Microanalysis, 25(S2), 2312–2313. https://doi.org/10.1017/s1431927619012297

J.M. Allaz, M.L. Williams, M.J. Jercinovic, J.J. Donovan, K. Goemann (2019). *Multipoint Background Analysis: Gaining precision and accuracy in microprobe trace element analysis.* Microscopy and Microanalysis, 1–17. https://doi.org/10.1017/S1431927618015660

M.B. Raschke, *E.J.D. Anderson*[#], *J. Van Fosson*[#], **J.M. Allaz**, J.R. Smyth, R. Škoda, P.M. Persson, R. Becker (2018). *Thalénite-(Y) from Golden Horn Batholith, Washington State, and comparison with new analyses from the White Cloud Pegmatite, Pikes Peak Batholith, Colorado, USA.* Mineralogical Magazine 82(2), 313-327.

M.B. Raschke, *E.J.D. Anderson*[#], **J. Allaz**, H. Friis, J.R. Smyth, R. Tschernich, R. Becker (2016). *Crystal chemistry of brannockite, KLi3Sn2Si12O30, from a new occurrence in the Golden Horn Batholith, Washington State, USA.* European Journal of Mineralogy 28(1), 153-161. http://doi.org/10.1127/ejm/2015/0027-2477

J. Allaz, M.B. Raschke, *P.M. Persson*[#], C.R. Stern (2015). *Age, petrochemistry, and origin of a REE-rich mineralization in the Longs Peak-St. Vrain batholith, near Jamestown, Colorado (U.S.A.).* American Mineralogist, 100(10), 2123–2140. http://doi.org/10.2138/am-2015-5253

S.A. Morse, **J. Allaz** (2013). *Experimental partitioning of Sr and Ba in Kiglapait feldspars*, American Mineralogist 98(11-12), 2197-2200. http://dx.doi.org/10.2138/am.2013.4630. Addendum in v. 99(2-3): http://dx.doi.org/10.2138/am.2014.641

J. Allaz, B. Selleck, M.L. Williams, M.J. Jercinovic (2013). *Microprobe analysis and dating of monazite from the Potsdam Formation, NY: A progressive record of chemical reaction and fluid interaction*. American Mineralogist 98(7), 1106-1119. http://dx.doi.org/10.2138/am.2013.4304

K.H. Mahan, **J.M. Allaz**, B.B. Graham, N.M. Kelly (2013). *Proterozoic metamorphism and deformation in the northern Colorado Front Range*, GSA Field Guides 33, 185-204, https://doi.org/10.1130/2013.0033(06)

M. J. Jercinovic, M.L. Williams, **J. Allaz**, J.J. Donovan (2012). *Trace Analysis in EPMA*. IOP Conf. Series: Materials Science and Engineering 32, 1-22. http://doi.org/10.1088/1757-899X/32/1/012012

J. Allaz, M. Engi, A. Berger, I. M. Villa (2011). *The effects of retrograde reactions and of diffusion on 40Ar-39Ar ages of micas*. Journal of Petrology, 52(4), 691-716. http://doi.org/10.1093/petrology/egq100

E. Janots, M. Engi, A. Berger, **J. Allaz**, O. Schwarz (2008). *Metamorphic sequence of REE-minerals in pelitic rocks of the Central Alps: Implications on allanite – monazite – xenotime phase relations*. Journal of Metamorphic Geology 26, 509-526. http://doi.org/10.1111/j.1525-1314.2008.00774.x

J. Allaz, X. Maeder, J.-C. Vannay, A. Steck (2005). *Formation of aluminosilicate-bearing quartz veins in the Simano nappe (Central Alps): structural, thermobarometric and oxygen isotope constraints*. Schweizerische Mineralogische und Petrographische Mitteilungen 85(2-3), 191-214. https://doi.org/10.5169/SEALS-1660

Research Funding

Swiss NSF	*REE-mineralization in pegmatites of the South Platte district in the Pikes Peak Batholith, Colorado (USA)*; October 2019 – September 2023; CHF 293'414.
NSF-EAR (MRI)	*Acquisition of an electron microprobe for major and trace element analysis;* September 2014 – August 2017 (#1427626); $1,142,857 + supplement (October 2015; $99,305).
USGS-MRERP	*Investigation of rare REE-minerals occurrence near Jamestown, CO (USA): mineral characterization and genesis*; April 2014 – March 2016; $46,966.

Research experience

2018 – present **Researcher & chief assistant ETH Zürich, Switzerland**

Manager of the electron microprobe and scanning electron microscope laboratory, research on the Pikes Peak Batholith and its REE mineralisation in Colorado (SNF grant), development of new methodology for better electron microprobe analysis (complex phase, beam sensitive…).

Collaborations: Multiple collaborations at ETH level (IGP and D-ERDW in general, some other departments at ETH), continuing collaboration with colleagues world-wide, notably in the US.

2012 – 2018 **Research Associate; Dept. of Geological Sciences, University of Colorado, Boulder (USA)**

Electron microprobe manager. Field of research: REE mineralization in Jamestown and South Platte district (CO), tectonometamorphism of Paleoproterozoic basement around Big Thompson Canyon (CO), collaboration on various project with EPMA users, development of new analytical protocols for trace element analysis and beam sensitive material by EPMA.

Collaborations: Profs. K. Mahan, J. Smyth, S. Mojzsis, M. Raschke, A. Templeton, T. Monecke, Y. Kuiper, M. Brueseke, A. Moeller, R. Kettler, G. Baird, N. Kelly, and others.

2009 – 2012 **Post-doctoral research; Dept. of Geosciences, University of Massachusetts, Amherst (USA)**

Pressure-Temperature-deformation-time relation, REE-phosphate geochemistry and geochronology by EPMA (CAMECA SX-100 "UltraChron"), development of new analytical methods for trace element analysis by EPMA. Projects on monazite U-Th-Pb dating by EPMA in sandstones of Adirondack Mountains (NY), and in the Grand Canyon (AZ, USA).

Collaborations: Prof. Michael L. Williams, Dr. Michael J. Jercinovic, Profs. B. Selleck, S.A. Morse, and K. Karlstrom, Dr. D. Harlov, J. Donovan.

2003 – 2008 **Ph.D. thesis; Institute of Geological Sciences, University of Berne (CH)**

Petrography, mineral chemistry, thermobarometry (TWQ, THERIAK-DOMINO) and Ar-Ar geochronology on micas from the Mesozoic metasediments of Central Alps. Aim to understand the dynamics of the Alpine metamorphism and to clarify the significance of age data.

Supervisors: Prof. Dr. Martin **Engi**, PD Dr. Alfons **Berger**, Prof. Dr. Igor M. **Villa**. *In collaboration with… Dr. E. Janots, Dr. J.-O. Schwarz, Prof. R. Bousquet, Dr. M. Wiederkehr*

2003 **M.Sc. thesis; Inst. of Mineralogy and Geochemistry, University of Lausanne (CH)**

Structural and metamorphic study, geological mapping, mineral chemistry, thermobarometry, pressure-temperature-deformation relation. Mineralogical and structural study of tension gashes with aluminosilicate ("Knauern"), and thermometry by stable oxygen analysis on quartz, garnet and aluminosilicate on vein and host rock.

Supervisors: PD Dr. Jean-Claude **Vannay**, Prof. Emeritus Albrecht **Steck**

Awards

2016	K.F.J. Heinrich Award from the Microanalysis Society (MAS).
2017	Outstanding Post-Doc Award from the University of Colorado at Boulder.

Synergistic Activities

2019 - present	Co-organiser of the "Mineralogy, Petrology and Geochemistry" symposium at the Swiss Geoscience Meetings.
2016 - present	Initiator, leader (2017-2018), and webmaster of the Focused Interest Group on MicroAnalytical Standards (FIGMAS: https://figmas.org), under the umbrella of the Microscopy Society of America & the Microanalysis Society.
November 2020	Co-organiser of the Swiss Geoscience Meeting at ETH Zürich (virtual).
August 2020	Symposium co-organiser for Microscopy & Microanalysis 2020 (virtual).
May 2019	Editor and co-organizer: *Topical Conference on Quantitative Microanalysis* (Microanalysis Society), University of Minneapolis (MI).
August 2017	Session co-organizer: *Standards, Reference Materials, and their Applications in Quantitative Microanalysis*, Microscopy and Microanalysis meeting (St-Louis, MO).
September 2016	Session co-organizer: *Micro-Analytical Techniques in Ore Deposit Research*, GSA annual meeting (Denver, CO).
July 2015	Session co-organizer: *Quantitative and Qualitative Microanalysis by EPMA and SEM*, Microscopy and Microanalysis meeting (Columbus, OH).
May 2015	Editor and co-organizer: *Topical Conference on Electron Probe Microanalysis* (Microanalysis Society), University of Madison (WI).
October 2013	Field-trip co-organizer: *Proterozoic metamorphism and deformation in the northern Colorado Front Range*, GSA 125th annual meeting (Denver, CO) – field trip canceled due to flooding.
May 2013	Session co-organizer: *REE deposits in the Rocky Mountains*, GSA Rocky Mountain section (Gunnison, CO).

2009 – present Development of an online database system for electron microanalysis: lab reservations, info on X-ray data, standards, quantitative and qualitative setups (element mapping, etc.). See http://dema.ch.

Course Teaching

2018 - present Lecturer at ETH Zürich:
– Analytical Techniques in Earth Sciences (651-4055-00L)
– Electron Microscopy (651-0046-00L).
– Electron Probe Microanalysis – Practice (651-0048-00L)

2014, 2015, 2017 Instructor GEOL-4700/5700 (summer class), University of Colorado, Boulder (USA): development of a new course on "Analytical Techniques in Solid Materials", with focus on the use of electron microprobe analyser and scanning electron microprobe (24h lecture + 20h lab).

June 2015 Instructor at Lehigh School of Microscopy, Lehigh University (PA, USA): Quantitative X-ray Microanalysis (1-week workshop).

Spring 2014 Instructor GEOL-2700, University of Colorado, Boulder (USA): Introduction to field geology (weekly 2 days of field work over half-semester).

09.2010 – 12.2010 Instructor GEO-301, UMass, Amherst (USA): Teaching mineralogy to 2nd and 3rd year student (weekly: 3h lecture + 3h lab).

Professional affiliations

European Microbeam Analysis Society	*Member since 2010, co-opted member since 2019,* ***secretary since 2021***
Swiss Geological Society	*Member since 2001,* ***committee member and webmaster since 2020***
Microscopy Society of America	*Member since 2015*
Mineralogical Society of America	*Member since 2013*
Microanalysis society	*Member since 2012*
Geochemical Society	*Member since 2010*
Geological Society of America	*Member since 2009*

Analytical experience

- Electron microprobe and scanning electron microscope: general maintenance, calibration, standardization, qualitative and quantitative analyses of major and trace elements, BSE/SE/CL imaging, element mapping, EBSD.
- ^{39}Ar-^{40}Ar analyses, stepwise heating technique: sample preparation, analyses, communication program for data acquisition, data treatment.
- Stable oxygen isotope analysis in silicates, data acquisition and treatment.
- X-ray fluorescence analysis, X-ray diffraction: sample preparation, data acquisition and treatment.
- Raman spectroscopy: data acquisition, application to maturation of organic matter (graphite thermometry).
- Mineral separation: vibration table, density liquid, magnet separator, hand-picking.

Programming and WWW experience

- Programming language: Visual Basic 6, Visual Basic for Application.
- Creation and maintenance of websites using programming language HTML, PHP, MySQL and CSS. For instance:
    - Database of the Focused Interest Group on Microanalytical Standards: https://figmas.org,
    - Database of electron Microanalysis (EDS-WDS), work to be published soon: http://de-ma.ch.
    - Lab reservation agenda for all labs at IGP/D-ERDW at http://igp.geoloweb.ch.

Professional meetings (partial listing) **** Invited / solicited talks.*** *# MSc or PhD student presenter*

08.2022 **J. Allaz**, E.S. Bullock, W.O. Nachlas, O.K. Neill, A. von der Handt, M. Guillong, L. Tavazzani, L. Zehnder, *An "open-poster" on the availability of microanalytical reference materials and two potential new alkali-feldspar reference minerals*, Geoanalysis 2022, Freiberg (Saxony, Germany), poster.

08.2022 **J. Allaz**, E.S. Bullock, W.O. Nachlas, O.K. Neill, A. von der Handt, *Focused Interest Group on Microanalytical Standards: an online database of standards, round robins, and potential new reference materials,* Geoanalysis 2022, Freiberg (Saxony, Germany), talk.

10.2021 *S. Degen[#],* **J. Allaz**, M.S. Krzemnicki, L. Franz, E. Reusser, *Characterisation of gem-quality spessartine-bearing metapelites from the northern Kaoko Belt, Namibia.* Virtual Swiss Geoscience Meeting 2021 (Geneva, CH), MSc student poster.

07.2021 *F. Keller[#]*, R.G. Popa, O. Bachmann, **J. Allaz**, N. Geshi, From precursory event to climactic caldera formation – variations in water saturation state in the Aso-4 super-eruptive system, virtual Goldschmidt Conference 2021 (Lyon, France), talk.

07.2021 *L. Fonseca Teixeira[#],* **J. Allaz**, O. Bachmann, *The zircon petrochronological record of a REE-enriched pegmatite and its source pluton in the Pikes Peak Batholith (Colorado, USA)*, virtual Goldschmidt Conference 2021 (Lyon, France), poster.

***04.2021** **J. Allaz,** *Applications of EPMA to geological materials*, 2nd Workshop on Electron Probe micro-analysis in Athens 2021.

***04.2021** **J. Allaz,** *Investigating Rare Earth Elements (REE) minerals with an electron microprobe*, 2nd Workshop on Electron Probe micro-analysis in Athens 2021.

04.2021 *L. Fonseca Teixeira[#],* **J. Allaz**, O. Bachmann, *Evolution of the crystallisation conditions in the wellington lake pegmatite in the pikes peak granite, colorado (USA)*, virtual EGU 2021 (Vienna, Austria), poster.

08.2019 **J. M**. **Allaz**, *R.G. Popa[#],* E. Reusser, L. Martin. *Electron Microprobe Analysis of Minor and Trace Elements in Beam Sensitive Materials: How Far Can We Go?* ***Microscopy & Microanalysis meeting***, Portland (OR), invited talk.

08.2017** **J. Allaz**, *Testing a New Electron Microprobe and Developing New Analytical Protocols*, ***Microscopy & Microanalysis meeting, St-Louis (MO), solicited talk for the MAS 50th anniversary session.

05.2017 **J. Allaz**, *Focused interest group on microanalytical standards (FIGMAS): assessing the quality, availability and need for standards in the microanalytical community*, ***EMAS conference***, Konstanz (Germany), poster.

05.2016 ***MAS Electron-Probe Microanalysis Topical Conference***, University of Madison (WI), talk.

- J. Allaz, P.K. Carpenter, *EPMA Quality Control II: Reproducibility, Precision-Accuracy, EDS, & Imaging*
- J. Allaz, M.J. Jercinovic, *General approach for precise and accurate trace element analyses by EPMA*

10.2015 **J. Allaz**, *C. Pritekel[#]*, C.B. Condit, D. Rattanasith, K.H. Mahan, N.M. Kelly, G.B. Baird, *Pressure-temperature and temporal constraints on regional metamorphism near Big Thompson Canyon, Colorado, USA*, ***GSA annual meeting***, Baltimore (MD), talk.

12.2014** **J. Allaz**, M.J. Jercinovic, M.L. Williams, J. Donovan, *Gaining precision and accuracy on microprobe trace element analysis with the multipoint background method*, ***AGU fall meeting, San Francisco (CA), invited talk.

08.2014** **J. Allaz**, M.J. Jercinovic, M.L. Williams, J. Donovan, *Trace Element Analyses by EMP: Pb-in-Monazite and New Multipoint Background Method*, ***Microscopy & Microanalysis meeting, Hartford (CT), invited talk.

10.2013 **J. Allaz**, C. Stern, *P.M. Persson[#]*, M.B. Raschke, *Proterozoic fluorbritholite-bearing REE-rich hydrothermal pods and veins from near Jamestown, Colorado*, ***GSA 125th annual meeting***, Denver (CO), talk.

12.2012 **J. Allaz**, *De¯MA: a web Database for electron Microprobe Analyses to assist EMP lab manager and users,* ***AGU Fall meeting*** 2012, poster.

03.2012 **J. Allaz,** B. Selleck, M.L. Williams, M.J. Jercinovic*, Dating fluid migration events through microprobe dating of detrital monazite from the Potsdam Formation, NY*, ***NE-GSA annual meeting***, Hartford (CT), talk.

05.2011 **J. Allaz**, M.L. Williams, M.J. Jercinovic, J. Donovan, *A new technique for electron microprobe trace element analysis: the multipoint background method,* ***EMAS conference***, Angers (France), poster.

12.2010 **J. Allaz**, M.L. Williams, M.J. Jercinovic, *Relating Major Silicates and Monazite Growth in Metamorphic Rocks: Application to the Upper Granite Gorge (Grand Canyon, USA)*, ***AGU Fall meeting*** 2010, poster.

06.2010 **J. Allaz**, M. Engi, A. Berger, I.M. Villa*, The role of retrograde reactions and of diffusion on ^{40}Ar-^{39}Ar mica ages*, ***Goldschmidt conference***, Knoxville (TN), talk.

05.2010 **J. Allaz**, M.L. Williams, M.J. Jercinovic, *An Approach to Relate Major Silicates and Monazite Growth in Metamorphic Rocks: Application to the Upper Granite Gorge (Grand Canyon, USA)*, ***GeoCanada meeting*** 2010, Calgary (Canada), talk.

12.2009 **J. Allaz**, M. Engi, E. Janots, A. Berger, I.M. Villa, *Monazite and allanite U-Th-Pb vs ^{39}Ar-^{40}Ar in equilibrated metasediments: closure behaviour and closure temperature*, ***AGU Fall meeting*** 2009, poster.

04.2007 **J. Allaz**, E. Janots, M. Engi, A.Berger, I.M. Villa, *Understanding Tertiary metamorphic ages in the northern Central Alps*, ***EGU meeting***, Vienna (Austria), talk.

04.2004 **J. Allaz**, X. Maeder, J.-C. Vannay, *Tectono-metamorphic significance of aluminosilicates-bearing quartz veins in the Central Alps*, ***Symposium Tektonik-, Struktur- und Kristallingeologie***, Aachen (Germany), talk.