Yishen (Eason) ZHANG

Leuven, Belgium

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PERSONAL INFORMATION

Date of Birth: 17th Decemeber 1993
Nationality: China
Institution: Earth and Environmental Sciences, KU Leuven
Address: Celestijnlaan 200E, 3001 Leuven

RESEARCH INTERESTS

I have broad research interests covering magma dynamics in volcanic systems, mantle processes and thermodynamics in solid solutions, which I study through experimental petrology, numerical modelling, and geochemical analysis.

My PhD projects focus on using high temperature high pressure facilities to understand 1) the differentiation, immiscibility and thermal structure of large igneous provinces and 2) crystallization kinetics in basaltic system.

Beside experimental study, I am very passionate about coding, software development, data analysis.

EDUCATION

KU Leuven **06. 2019 – 05. 2023 (expected)**
PhD in Geology *Leuven, Belgium*

University of Liège **10. 2018 – 04. 2019**
Visiting scholar *Liège, Belgium*

China University of Geosciences (Beijing) **09. 2016 – 05. 2019**
Master in Geology *Beijing, China*

China University of Geosciences (Beijing) **09. 2012 – 07. 2016**
Bachelor in Geology *Beijing, China*

LABORATORY EXPERIENCE

- **Experimental petrology:**
  1 atm gas mixing furnace
  Over 300 runs with 1 atm high to low-temperature experiments, kinetic cooling experiments
  Piston cylinder apparatus:
  Experienced in 1-2GPa half inch experiments, capsule, assemblage preparation
- **X-ray tomography (nanotom system):**
  Experienced in geo-material 3D scanning, data processing
- **Electron microprobe:**
  Over 1000 hours experience with EPMA, experienced in instrument calibration, analytical method development, high precision measurement, mapping
- **Scanning Electron Microanalysis:**
  Imaging of BSE and SE

PC SKILLS

- Fluent in programming with Python and proficient with Matlab, including package development, numerical modelling, data analysis. Standard knowledge of shell scripting, web building language including Django framework, HTML and CSS. Vim enthusiast
- Experienced with scientific writing in Words, LaTeX, Overleaf
- Experienced in design and editing with Adobe Illustrator, Photoshop, Premiere

FIELD WORK EXPERIENCE

2022 Fogo volcano, (Cape Verde), 1 week
2018 Changbai Mountain (North China), Tianchi volcano, 2 weeks
2018 Yunnan (China), Tengchong volcano, 2 weeks
2018 Emeishan Province (China), 2 weeks
2018 Zhangjiakou (North China), Yaojiazhuang complex, 1 weeks
2014 Akesu, Xinjiang (China), Gold deposits, 3 weeks
2013 Zhoukoudian (China), field mapping courses, 4 weeks
2012 Beidaihe (China), excursion, 3 weeks

PRIZES & AWARDS

2018 Institute travel grant for attending Goldschmidt, 2018 (¥12000 = USD 1700)
2018 National Awards for Excellent Graduate Students (¥30,000 = USD 4300, 1%)
2014.12 Third prize in professional course. (15%)
2014.6 Third prize in professional course. (15%)
2014.5 Fourth prize in Institute Scientific Research Activity.

SERVICES

2023 Primary convenor, Goldschmidt 2023, *Dynamics and timescales in magmatic reserviors, conduits and dikes*

TEACHING

2022 Soil Science & Geology (practical, igneous arocks)
2021 Soil Science & Geology (practical, igneous and sedimentary rocks)

SUPERVISION

1. Lander Cuypers, Experimental study of olivine morphology. *Bachelor, 2021*
2. Sarah Stammen, Experimental study of olivine and spinel equilibrium. *Master. 2020*

PUBLICATIONS

Journal publications

1. **Zhang Y**, Namur O, Charlier B. 2023. Experimental study of high-Ti and low-Ti basalts: liquid lines of descent and silicate liquid immiscibility in large igneous provinces. *Contrib. Mineral. Petrol. accepted*
2. **Zhang Y**, Hou T, Veksler IV, Lesher CE, Namur O, 2018. Phase equilibria and geochemical constraints on the petrogenesis of high-Ti picrite from the Paleogene East Greenland flood basalt province. *Lithos, 300-301,20-32.*

Conference Abstract

1. **Zhang Y**, Namur O, Charlier B, Li W, Shorttle O, Gazel E, Jennings ES, Thy P, Grove TL. A re-evaluation of Al-in-Olivine geothermometer. Goldschmidt 2022 *oral*
2. **Zhang Y**, Namur O, Charlier B, 2020. Experimental liquid lines of descent and Silicate Liquid Immiscibility for low-Ti and high-Ti basalts of the Emeishan Large Igneous Province, SW China. AGU 2021. *poster*
3. **Zhang Y**, Namur O, Charlier B, 2020. Experimental liquid lines of descent for low-Ti and high-Ti basalts of the Emeishan Large Igneous Province, SW China. EMPG-XVII 2020. *poster*
4. **Zhang Y**, Hou T, Veksler IV, Lesher CE, Namur O, 2018. Phase equilibria and geochemical constraints on the petrogenesis of high-Ti picrite from the Paleogene East Greenland flood basalt province. Goldschmidt Abstract 2018. *oral*

In progress

1. **Zhang Y**, Namur O, Li W, Shorttle O, Gazel E, Jennings ES, Thy P, Grove TL, Charlier B. (in prep). A re-evaluation of the Al-in-Olivine geothermometer and application in primitive basalts. Planned submission to CMP
2. Li W, **Zhang Y** (in prep). PyAp: a python package for calculating magmatic volatile, trace element concentrations, and oxygen fugacity using mineral apatite. Code available at https://github.com/alexweiranli/pyAp

3. Dekoninck A, Rufet G, Baptiste J, Wyns R, Philippo S, **Zhang Y**, Namur O (under review in Chemical Geology). Petrogenesis and 40Ar/39Ar dating of epithermal romanechite from the Romanèche Mn deposit (France).
4. Pirotte H, Pommier A, Namur O, **Zhang Y** Berndt J, Klemme S, Charlier B (under review in Icarus). Internal differentiation and volatile budget of Mercury inferred from trace element partitioning experiments at highly reduced conditions.
5. **Zhang Y**, Namur O, Charlier B (in prep). Effects of melt composition and undercooling on kinetic partitioning of trace elements in silicate minerals.
6. **Zhang Y**, Namur O, Charlier B (in prep). A 3D characterization of olivine growth rates with effects of melt compositions and undercoolings

CODE DEVELOPMENT

1. Li W, **Zhang Y** – pyAp, a package for calculating magmatic volatile, trace element concentrations, and oxygen fugacity using mineral apatite. *python*
2. **Zhang Y** – Mass balance calculation for petrology using non-negative and matrix decomposition algorithms, with MCMC propagating errors on phases and bulk composition. *python*
3. **Zhang Y**, Namur O, Gerve TDV – Multi-component olivine diffusion, integrated with uncertainties of temperature, pressure, oxygen fugacity. *python*
4. **Zhang Y** – Stepwise backward F-test model for multiple linear regression. *python*

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