

## ***CV - Colin Jackson, Assistant Professor, Tulane University***

### **Education:**

2014: *Brown University*, Ph.D, Geological Sciences

*Dissertation:* “Experimental Constraints on the Geochemical Processing of Planetary Interiors: Noble Gases and Spinel Spectroscopy” Advisor: Stephen Parman

2011: *Brown University*, M.Sc, Geological Sciences

2008: *University of California, Santa Cruz*, B.S., Earth Science

*Thesis:* “Partitioning of Ni between Olivine and an Iron-Rich Basalt: Experiments, Partition Models, and Planetary Implications” Advisor: Jim Gill

### **Positions held:**

2019-present: Assistant Professor, Department of Earth and Environmental Sciences, Tulane University

2017-2018: Research Geologist, Department of Mineral Sciences, Smithsonian Institution

2016-2017: Postdoctoral Fellow, Department of Mineral Sciences, Smithsonian Institution

2014-2016: Postdoctoral Fellow, Geophysical Laboratory, Carnegie Institution for Science

2009-2014: Research Assistant: Brown University, Experimental Petrology Lab

2008-2009: Research Assistant: USGS, Geophysics Unit of Menlo Park, CA

2007: Summer Intern, Lunar and Planetary Institute, Houston, TX

### **Publications (\* denotes student mentored):**

-W. Heck\*, A. Herrmann, **C.R.M Jackson** (submitted to *Geochimica Cosmochimica Acta*)  
Experimental degassing of moderately volatile chalcophile elements from silicate melt

-T. Suer, **C.R.M. Jackson**, D. Grewal, C. Dalou T. Lichtenburg (2023) The distribution of highly volatile elements during rocky planet formation, *Frontiers in Earth Science* 11, 1159412

-T. Prissel, Nan Zhang, **C.R.M. Jackson**, Haoyuan, (2023) A Cumulate Mantle Overturn Origin for Lunar Mg-suite. *Nature Communications* 14, Article number: 5002 (2023)

-**C.R.M. Jackson**, E Cottrell, (2023) Nitrogen partitioning between silicate phases and aqueous fluid depends on concentration, *Geochimica Cosmochimica Acta* 354, 1-12

-**C.R.M Jackson**, E. Cottrell, Z Du, N.R. Bennett, Y Fei (2021) High pressure redistribution of nitrogen and sulfur during planetary stratification, *Geochemical Perspectives Letters* 18, 37-42

-**C.R.M. Jackson**, C.D. Williams, Z. Du. N.R. Bennett, S. Mukhopadhyay, Y. Fei (2021) Incompatibility of argon during magma ocean crystallization, *Earth and Planetary Science Letters*, 533, 116598

-**C.R.M. Jackson**, E. Cottrell, B. Andrews, (2021) Oxidizing and warm slabs limit ingassing efficiency of nitrogen to the mantle, *Earth and Planetary Science Letters*, 533, 116615

- **C.R.M. Jackson**, N.R Bennett, Z Du, E. Cottrell, Y, Fei, (2018) Early episodes of high-pressure core formation preserved in plume mantle, *Nature*, 553, 491

-N. Dygert, **C.R.M. Jackson**, M. A. Hesse, M. Tremblay, D. Shuster, J.T. Gu, (2018) Plate tectonic cycling modulates Earth's  $^3\text{He}/^{22}\text{Ne}$  ratio, *Earth and Planetary Science Letters*, 498, 309-321

- Z. Du, **C.R.M. Jackson**, N.R Bennett, P. Driscoll, J Deng, K. Lee, E. Greenburg, V. Prakapenka, Y Fei, (2017) Insufficient energy from MgO exsolution to power early geodynamo, *Geophysical Research Letters*, 44, 22, 11,376-11,381

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- K. Shimizu, Y. Liang, C. Sun, **C.R.M. Jackson**, A. Saal (2017), Parameterized Lattice Strain Models for REE Partitioning between Amphibole and Silicate Melt, *American Mineralogist* 102, 2254–2267
- A.J. Smye, **C.R.M. Jackson**, M. Konrad-Schmolke, M.A. Hesse, S.W. Parman, D.L. Shuster C.J. Ballentine (2017), Noble gases recycled into the mantle through cold subduction zones, *Earth and Planetary Science Letters*, 471, 65-73
- N. A. Starkey, **C.R.M Jackson**, R. C. Greenwood, S. Parman, I. A. Franchi, M.G. Jackson., J. G. Fitton, F. M. Stuart, M. Kurz, L. M. Larsen (2016) Triple oxygen isotopic composition of the high  $^3\text{He}/^4\text{He}$  mantle. *Geochimica Cosmochimica Acta* 176, 227-238
- K.B. Williams\*, **C.R.M. Jackson**, L.C. Cheek, K.L. Donaldson Hanna, C.M. Pieters, S.W. Parman, M.D. Dyar, T.C. Prissel (2016) Reflectance Spectroscopy of Chromium-bearing Spinel with Application to Recent Orbital Data from the Moon. *American Mineralogist*, 101, 726-734
- C. R. M. Jackson**, D.L. Shuster, S.W. Parman, A.J. Smye (2016) Noble gas diffusivity hindered by low energy sites in amphibole, *Geochimica Cosmochimica Acta* 172, 65-75
- C. R. M. Jackson**, S.W. Parman, S.P. Kelley, R.F. Cooper (2015), Light noble gas dissolution into ring structure-bearing materials and lattice influences on noble gas recycling, *Geochimica Cosmochimica Acta* 159, 1-15
- C.R.M. Jackson**, L. Cheek, K. Williams, K. Donaldson-Hanna, C. Pieters, S. Parman, R. Cooper, M. Dyar, M. Nelms, and M. Salvatore (2014), Visible-Infrared Spectral Properties of Iron-bearing Aluminated Spinel Under Lunar-Like Redox Conditions, *American Mineralogist*, 99, 10, 1821-1833
- T.C. Prissel, S.W. Parman, **C.R.M. Jackson**, M.J. Rutherford, P.C. Hess, J.W. Head, L. Cheek, D. Dhingra, and C.M. Pieters (2014), Pink Moon: The Petrogenesis of Pink Spinel Anorthosites and Implications Concerning Mg-suite Magmatism, *Earth and Planetary Science Letters*, 403, 144-156
- C. Pieters, K. Donaldson Hanna, L. Cheek, D. Dhingra, T. Prissel, **C. Jackson**, D. Moriarty, S. Parman, and L. Taylor (2014), The distribution of Mg-spinel Across the Moon and Constraints on Crustal Origin, *American Mineralogist*, 99, 10, 1893-1910
- C.R.M. Jackson**, L. B. Ziegler, H. Zhang, M.G. Jackson, D. R. Stegman (2014), A geochemical evaluation of potential magma ocean dynamics using a parameterized model for perovskite crystallization, *Earth and Planetary Science Letters*, 392, 154-165
- C. R. M. Jackson**, S.W. Parman, S.P. Kelley, R.F. Cooper (2013), Constraints on light noble gas partitioning at the conditions of spinel peridotite melting, *Earth and Planetary Science Letters*, 384, 178-187
- C. R. M. Jackson**, S.W. Parman, S.P. Kelley, R.F. Cooper (2013), Noble gas transport into the mantle facilitated by high solubility in amphibole, *Nature Geoscience*, 6, 562-565
- Donaldson Hanna, K. L., I. R. Thomas, N. E. Bowles, B. T. Greenhagen, C. M. Pieters, J. F. Mustard, **C. R. M. Jackson**, and M. B. Wyatt (2012), Laboratory emissivity measurements of the plagioclase solid solution series under varying environmental conditions, *Journal of Geophysical Research*, Vol 117, Issue E11
- J. Filiberto, **C. Jackson**, L. Le., and A.H. Treiman (2009), Partitioning of Ni between Olivine and an Iron-Rich Basalt: Experiments, Partition Models, and Planetary Implications. *American Mineralogist* 94, 256-261

## ***CV - Colin Jackson, Assistant Professor, Tulane University***

### **Proposals on which C.R.M. Jackson is the lead PI:**

- NSF EAR, CAREER, Project title: Salts, experiments, and mass transfer in subduction settings, recommended for funding, \$711,891, 2022-2027
- NSF EAR, Petrology and Geochemistry, Project title: A plan to determine if the core can be the ultimate high  $^3\text{He}/^4\text{He}$  source. 2021-2024 \$438,823
- NASA Emerging Worlds, Project title: A combined chemical and physical investigations of metal-silicate interactions in magma ocean environments, 2021-2024, \$819,969
- NSF EAR, Petrology and Geochemistry, Project title: Nitrogen transiting the redox and subduction barrier. 2017-2019, \$153,363
- Argonne National Laboratory, Advanced Photon Source, 13 IDD, Project title: Experimental determinations of noble gas partitioning between Earth's major geochemical reservoirs during accretion, 16 shifts, 2014-2016
- Cooperative Institute for Dynamics Earth Research 2012, Group Research Proposal, Basal Magma Ocean (BMO) Working Group, \$3950

### **Abstracts since joining Tulane faculty (student mentored\*):**

- Bijaya B Karki, Abin Shakya, Dipta B Ghosh, Gabrielle Morra, Colin Jackson, Computer simulation and analysis of bulk earth melt system: Insights into core-mantle differentiation, AGU Fall Meeting 2023
- Leila Honarbakhsh, Gabriele Morra, Peter Mora, Colin Jackson and Bijaya B Karki4Planetary Scale Lattice Boltzmann Models of Metal-Silicate Interactions in Magma Oceans During Planetary Accretion, AGU Fall Meeting 2023
- Maddy Sita, Marvin Osorio, Colin Jackson, Sujoy Mukhopadhyay, Exploring the Core's Potential to Host a Primordial Helium Reservoir, AGU Fall Meeting 2023
- Mallick E\*, Jackson CRM, The journey of chlorine in altered oceanic crust to sub arc depths, AGU Fall Meeting 2021
- Heck W\*, Herrmann A, Jackson CRM, Moderately volatile and chalcophile element evaporation from various melts in various atmospheres, AGU Fall Meeting 2021
- Prissel T, Zhang N, Jackson CRM, Li H, Cumulate Overturn Dynamics of the Lunar Mantle Constrained by Mg-suite Petrogenesis, AGU Fall Meeting 2021
- Jackson CRM, Cottrell E, Du Z, Bennett NR, Fei Y, High pressure redistribution of nitrogen and sulphur during planetary stratification, AGU Fall Meeting 2021
- Jackson CRM, Williams CD, Du Z, Bennett NR, Mukhopadhyay S, Fei Y, Incompatibility of argon during magma ocean crystallization, COMPRES Annual Meeting 2021
- Jackson CRM, Williams CD, Du Z, Bennett NR, Mukhopadhyay S, Fei Y Incompatibility of argon during magma ocean crystallization, DINGUE Workshop 2021
- Jackson CRM, Cottrell, Andrews B, Experimental investigations of nitrogen transiting the subduction barrier (Invited), AGU Fall Meeting 2019
- Jackson C, Cottrell E, Non-Henrian Partitioning of Nitrogen in Slab Environments, Goldschmidt, 2020
- Jackson CRM, Du Z, Bennett NR, Fei Y, Cottrell E, Sequestration of nitrogen in the core during accretion, COMPRES Meeting 2019
- Jackson CRM, Bennett NR, Du Z, Cottrell E, Fei Y, Early episodes of high-pressure core formation preserved in plume mantle (Invited), AGU Fall Meeting 2018

### **Honors/Awards:**

- School and Science and Engineering, Largest Award Recipient, Junior Faculty, 2021
- Carnegie Postdoctoral Fellowship, 2014

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- Joukowsky Outstanding Dissertation Prize, *Nominated (one per department)*, 2014
- Dissertation Fellowship, Brown University, 2013
- Lunar Science Forum, Poster Award, 1<sup>st</sup> Place, 2013
- Outstanding Student Paper Award, AGU Fall Meeting 2013, VGP Section
- First Year Fellowship, Brown University, 2009-10
- Dean's Research Award, UCSC, 2007-08
- Departmental and Thesis Honors, Dept. of Earth Science, UCSC

### **Invited Presentations:**

- Rice University, 2023
- NASA RCN Nitrogen Workshop, 2023
- CRPG, France, 2022
- University of Louisiana, Lafayette, 2022
- Zhejiang University, 2021
- LSU, 2021
- AGU Fall Meeting, 2018, 2019
- Tulane, 2018
- U. of Missouri, 2018
- Penn State, Nov. 2017
- Geological Society of Washington, 2016
- Geophysical Laboratory, 2016, 2018
- Syracuse University, 2016
- Ehime University, 2016
- UC Davis, 2016
- UC Riverside, 2016
- NMNH, Smithsonian, 2016
- U. of Maryland, Seminar, 2015, 2016, 2018
- Gordon Research Seminar, MA, 2013
- Post-AGU CIDER Workshop, UCB, 2012
- Boston University, 2011

### **Classes Taught:**

- EENS 1110 Planet Earth (with laboratory): S19, S21, F23 (co-taught with Ebinger), S24
- Habitable Planet (with laboratory): F24 (co-taught with Kareem)
- EENS 3190/6190 Earth Materials (with laboratory): S20, F21
- Special Topics in EENS: F20, F23 (co-taught with Ebinger)
- EENS 6660-02 SEPS Reading Group (1 credit): F20, S21, F22
- EENS 6660-01 Advanced Geochemistry and Geophysics: S22 (co-taught with Ebinger), F23 (co-taught with Ebinger)
- EENS 3660/6660 High Temperature Geochemistry: F20
- EENS 6070-3 Rocky World Formation: S22
- EENS 4910-2 Laboratory Research: S22
- EENS 6070-3 Independent Research: F20
- EENS 6082-01 Why is Earth Unique?: F23 (co-taught with Ebinger)

### **Service and Synergistic Activities:**

- Department Liaison for AGU Bridge Program membership, 2021-present

## ***CV - Colin Jackson***

- Graduate Program Committee, Department of Earth and Environmental Sciences, Tulane University, 2021-present
- Faculty searches: 2022, 2023
- AGU Fall Meeting Program Committee, Coordinator, SEDI Section, 2019-2022
- Honor Board, School of Science and Engineering, Tulane University, 2020-present
- Outstanding Student Presentation Award coordinator, AGU Fall Meeting, VGP Section, 2017-2018
- Session convener: Japanese Geoscience Union, 2016; AGU Fall Meeting 2016, 2017, 2018, 2021, 2023; Goldschmidt 2018, 2020
- Journal reviewer for Nature, Nature Geoscience, Geochemical Perspective Letters, Science Advances, Earth and Planetary Science Letters, Contributions to Mineralogy and Petrology, Chemical Geology, American Mineralogist, Review of Scientific Instruments, and Geochimica et Cosmochimica Acta
- External reviewer for NASA, NSF, ERC (5 Panels)
- Panel reviewer for NASA, NSF (3 Panels)
- Geological Sciences Graduate Student Representative to Faculty, 2012-2013
- Participant, CIDER Summer Workshop, July-August 2012, Santa Barbara, CA, USA
- Participant, Gordon Research Conference, Interior of the Earth, Mt Holyoke, MA, USA (2011, 2013)

### **Advising:**

- Primary advisor: Ekanshu Mallick (PhD, 4<sup>th</sup> year), Maddy Sita (MS, 2<sup>nd</sup> year)
- Committee member: Sarah Oliva (PhD), Omolola Akintomide (PhD), Sam Hillburn (honors thesis), Jesse Schlopp (PhD, University of Tennessee)
- Undergraduate student participation in lab at Tulane: Ilon Goldberg, Emily White
- Undergraduate summer researchers: Kelsey Prissel (Brown), Reed Mershon (Geophysical Laboratory), Ian Ocampo (Smithsonian), Jeresun Atkin (Tulane)
- Preliminary examination board member: Kevin Reece, Jose Silvestre, Martin Musila, Melinda Quock,
- Graduated Students: Will Heck (MS 2022), Marvin Osorio (MS 2023)