

NIR Z. BADT

Postdoctoral Fellow, University of Pennsylvania

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EDUCATION

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| Postdoctoral Fellow University of Pennsylvania Advisor: <i>Dr. David Goldsby</i> | 2022 – Present |
| PhD Earth, Environmental and Planetary Sciences Brown University Advisors: <i>Dr. Terry E. Tullis</i> and <i>Dr. Greg Hirth</i> | 2022 |
| MSc Geological and Environmental Sciences Ben-Gurion University, Israel Advisors: <i>Dr. Yossef H. Hatzor</i> and <i>Dr. Amir Sagy (Geological Survey of Israel)</i> | 2014 |
| BSc Geological and Environmental Sciences Ben-Gurion University, Israel | 2012 |

TEACHING EXPERIENCE

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| Lecturer (upcoming) <i>Earthquakes: top to bottom</i> University of Pennsylvania | Fall 2024 |
| Teaching Assistant (PhD) <i>Structural Geology</i> Brown University | Spring 2018, 2019 |
| Teaching Assistant <i>Introduction to Foundation Engineering</i> Shamoon College of Engineering | Fall 2015 |
| Teaching Assistant (MSc) <i>Reservoir Rock Mechanics</i> Ben-Gurion University | Spring 2014 |
| Teaching Assistant (MSc) <i>Introduction to Geomechanics</i> Ben-Gurion University | Fall 2012, 2013 |
| Teaching Assistant (MSc) <i>Rock Tunneling</i> Ben-Gurion University | Fall 2012, 2013 |

AWARDS AND FELLOWSHIPS

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| Department Chair Postdoctoral Fellowship <i>University of Pennsylvania</i> | 2022-2025 |
| First-Year Fellowship <i>Brown University</i> | AY 2016–17 |
| MSc Excellence Fellowship <i>Ben-Gurion University</i> | AY 2012–13 |
| Department Chair Award <i>Ben-Gurion University</i> | 2012 |

PUBLICATIONS

1. Tal, Y. and **Badt, N. Z.** (2024). Thermal pressurization in rough faults. *In preparation*.
2. Bhattacharya, P., Tullis, T. E., Rubin, A. M., Beeler, N. M. and **Badt, N. Z.** (2024). Evolution of frictional state involves changes in contact strength. *In preparation*.
3. Maor, R., **Badt, N. Z.** and Goldsby, D. L. (2024). A method for calculating attenuation in creeping materials. *Submitted to: **Geophysical Research Letters***.
4. **Badt, N. Z.**, Maor, R. and Goldsby, D. L. (2024). A nanoindentation study of attenuation in geological materials. *Submitted to: **Earth and Space Science***.
5. **Badt, N. Z.**, Goldsby, D. L. and Pharr, G. M. (2024). Frictional aging of single-asperity nanoindentation contacts in quartz and calcite. *Geophysical Research Letters*, 51(4), e2023GL105471.
<https://doi.org/10.1029/2023GL105471>
6. **Badt, N. Z.**, Huber, C., Hirth, G. and Tullis, T. E. (2023). The pressure- and temperature-dependence of thermal pressurization in localized faults. *Journal of Geophysical Research: Solid Earth*, e2023JB026558.
<https://doi.org/10.1029/2023JB026558>
7. **Badt, N. Z.**, Tullis, T. E., Hirth, G. and Goldsby, D. L. (2020). Thermal pressurization weakening in laboratory experiments. *Journal of Geophysical Research: Solid Earth*, 125(5), e2019JB018872.
<https://doi.org/10.1029/2019JB018872>
8. **Badt, N.**, Hatzor, Y. H., Toussaint, R. and Sagy, A. (2016). Geometrical evolution of interlocked rough slip surfaces: The role of normal stress. *Earth and Planetary Science Letters*, 443, 153–161.
<https://doi.org/10.1016/j.epsl.2016.03.026>

SELECTED PRESENTATIONS

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| Geological Survey of Israel (invited) | 2024 |
| Hebrew University of Jerusalem (invited) | 2023 |
| Ben-Gurion University (invited) | |
| Weizmann Institute of Science (invited) | |
| AGU Fall Meeting (oral) | 2022 |
| Southern California Earthquake Center Annual Meeting (poster) | |
| University of California, Santa Cruz (invited) | |

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| AGU Fall Meeting (poster) University of Pennsylvania (invited) | 2021 |
| AGU Fall Meeting (poster) Southern California Earthquake Center: Fault Friction Workshop (invited) | 2020 |
| AGU Fall Meeting (oral) Southern California Earthquake Center Annual Meeting (poster) | 2019 |
| AGU Fall Meeting (poster) Southern California Earthquake Center Annual Meeting (poster) | 2018 |
| AGU Fall Meeting (oral) Southern California Earthquake Center Annual Meeting (poster) | 2017 |

MENTORING

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| Daniel Lukens <i>Brown University (visiting student)</i> <i>Guided and advised undergraduate student in studying the rheology of quartz with varying water content.</i> <i>This project will be developed into the student's undergraduate Senior thesis.</i> | 2024 |
| Linda Marone <i>Cornell University (visiting student)</i> Research Experience for Undergraduates (REU) program: <i>Guided student in conducting nanoindentation experiments and EBSD on quartzite and olivine.</i> | Summer 2024 |
| Audrey Yin <i>University of Virginia (visiting student)</i> Research Experience for Undergraduates (REU) program: <i>Guided student in conducting and analyzing nanoindentation creep experiments on various minerals.</i> | Summer 2024 |
| Ananth Srivinas <i>University of Pennsylvania</i> <i>Guided and advised graduate student in conducting nanoindentation experiments on alligator teeth.</i> <i>This project has been incorporated into the student's PhD dissertation as one of the chapters.</i> | 2024 |
| Ron Maor <i>University of Pennsylvania</i> <i>Guided and advised graduate student on one of his PhD dissertation chapters.</i> <i>This project has been submitted as a manuscript to: Geophysical Research Letters.</i> | 2023–24 |
| Sunme Zhao <i>University of Pennsylvania</i> <i>Guided student in conducting and analyzing research project in contact mechanics:</i> <i>The role of dislocations in micro-scale contacts in olivine.</i> | 2022–23 |
| Hannah Tebbens <i>College of William and Mary (visiting student)</i> Research Experience for Undergraduates (REU) program: <i>Guided student in conducting and analyzing nanoindentation experiments on quartz.</i> | Summer 2022 |
| Jessica Wen <i>Colgate University (visiting student)</i> Research Experience for Undergraduates (REU) program: | Summer 2022 |

Guided student in conducting and analyzing nanoindentation experiments on quartz.

Ryan Finlay | *Brown University*

2019–20

Guided student in conducting Brazil tests, analyzing data and writing undergraduate Senior thesis.

OTHER ACADEMIC AND NONACADEMIC ROLES

Reviewer | *JGR: Solid Earth, Tectonophysics, Seismica*

2023 –

Graduate student faculty representative | *Brown University*

2020–21

Research assistant | *Arava and Dead Sea Science Center*

2015–16

Staff geologist | *Geo-Log Geotechnical Services Inc.*

2014–15

Undergraduate research assistant | *Ben-Gurion University*

2011–12

FIELD EXPERIENCE

Teaching Assistant | *Structural Geology (Brown University)*

2018, 2019

Advised and assisted students with mapping and structural characterization of fault zones.

Research Assistant | *Mapping of precarious balanced rocks in S. Israel (ADSSC)*

2015–16

Assisted Dr. Yaron Finzi in mapping in S. Israel.

Teaching Assistant | *Rock Tunneling (BGU)*

2012, 2013

Advised and assisted students with mapping rock fractures in M. Ramon.

Student | *Field camp: igneous and metamorphic rock mapping (BGU)*

2012

Participated in 5-day field camp in the Eilat mountains.

Student | *Regional geology field camp: Northern Israel (BGU)*

2012

Participated in 5-day field camp in Northern Israel.

Student | *Geological mapping: Arad (BGU)*

2011

Participated in a semester-long course mapping geological units, producing a geological map of the Arad area.

Student | *Regional geology field camp: Southern Israel (BGU)*

2011

Participated in 5-day field camp in Southern Israel.

Student | *Introduction to rock and minerals field camp (BGU)*

2010

Participated in 5-day field camp in the Eilat mountains.