

**Gautam Mitra**  
Curriculum Vitae  
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**CONTACT INFORMATION**

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**RESEARCH INTERESTS**

Structural mapping and kinematic analysis. Application of strain analysis and microstructural studies to understanding strain histories and crustal rheology.

Geometry and mechanics of fold-thrust belts and foreland uplifts. Critical wedge theory. Thermal and mechanical modeling.

Fracture network development and implications for fluid flow. Cataclastic flow in fault zones and within thrust sheets.

Brittle fault zones and ductile shear zones in continental crust -- implications for the brittle-ductile transition. Basement - cover relationships in mountain belts.

**EDUCATION**

- 1977 Ph.D. (Geology), The Johns Hopkins University, Baltimore, MD  
Advisor: David Elliott
- 1970 M.Sc. (Geology) University of Calcutta, India  
Advisor: Dhruba Mukhopadhyay
- 1968 B.Sc. (Geology) University of Calcutta, India

**EMPLOYMENT HISTORY**

- 1992 -present Professor of Geological Sciences, University of Rochester, Rochester, NY.
- 1984 - 1992 Associate Professor of Geological Sciences, University of Rochester.
- 1981 - 1984 Assistant Professor of Geological Sciences, University of Rochester.
- 1977 - 1981 Assistant Professor of Geology, University of Wyoming, Laramie, WY.
- 1976 - 1977 Assistant Professor (part-time), Morgan State University, Baltimore, MD.

## AWARDS

- 2012 Lifetime Achievement Award in Graduate Education, University of Rochester
- 1996 Elected Fellow, Geological Society of America
- 1970 University of Calcutta gold medal (for best M.Sc. student in Geology).
- 1968 Chandranath Moitra medal, Hemchandra Dasgupta medal, Jubilee Prize, and Government of India National Scholarship (all for best B.Sc. Student in Geology, University of Calcutta).

## PROFESSIONAL SERVICES

### Committees

- 2010 Executive Council Member, Structural Geology & Tectonics Studies Group – India.
- 1992-2002 Member, Executive Backing Committee, International Asso. of Structural Geologists.
- 1994 Chair, Best Paper Award Committee, Structure & Tectonics Division of Geological Society of America
- 1992-1994 Member, Best Paper Award Committee, Structure & Tectonics Division of Geological Society of America

### Editorial Duties

- 1990-2008 Member of Editorial Advisory Board, Journal of Structural Geology
- 1986-1990 Associate Editor, Journal of Structural Geology
- 1986-1988 Associate Editor, Geological Society of America Bulletin
- 1986-1988 Member of Editorial Board of GEOLOGY
- 1988 Co-editor of Geol. Soc. Am. Special Paper 222 "Geometry and Mechanisms of Thrusting, with Special Reference to the Appalachians"

### Synergistic Activities (Field Trips, Short Courses, etc.)

- 2013 Co-leader of field trip "Transect of the Sevier and Laramide orogenic belts, northern Utah to Wyoming: Evolution of a complex geodynamic system". Geological Society of America Annual Meeting, Denver, CO.

- 2006 Short course on fold-thrust belt geometry and mechanics. Yonsei University, Seoul, S. Korea.
- 2002 Short course on fold-thrust belt geometry and mechanics. Calcutta University, Calcutta, India.
- 1998 Co-leader of field trip "Sevier thrust belt central-Utah: Sevier Desert to Wasatch Plateau". AAPG-SEPM Joint Annual Mtg, Salt Lake City, UT.
- 1997 Co-leader of field trip "Sevier thrust belt central-Utah: Sevier Desert to Wasatch Plateau". Geological Society of America Annual Meeting, Salt Lake City, UT.
- 1991 Co-leader of Appalachian Tectonic Studies Group trip "Progressive deformation in the Anthracite Regions of the Pennsylvania Valley & Ridge Province".
- 1989 Associate leader of field trip "Geometry and Deformation Fabrics in the Central and Southern Appalachian Valley and Ridge and Blue Ridge." 28th International Geological Congress, Washington, D.C.
- 1986 Co-leader of field-trip "Geology of Little Mountains thrust belt." Geological Society of America NE Section Meeting, Kiamesha Lake, NY.
- 1986 Short course on "Deformation mechanisms and development of mesoscopic structures in a fold-thrust belt." Geological Society of America NE Section Meeting, Kiamesha Lake, NY.
- 1985 Co-chair of Symposium "Geometry and Mechanisms of Appalachian Thrusting." Geological Society of America SE Section Meeting, Knoxville, TN.
- 1983 Short course on "Material Properties of Rocks" at Johns Hopkins University.
- 1982 Co-leader of field-trip "Geology of the Catoctin-Blue Ridge Anticlinorium in northern Virginia." Geological Society of America NE-SE Section Mtg, Washington, D.C.

### Professional Affiliations

Fellow, Geological Society of America  
 Member, American Geophysical Union  
 Member, Sigma Xi  
 Member, International Association of Structural & Tectonic Geologists  
 Executive Council Member, Structural Geology & Tectonics Studies Group – India

## PUBLICATIONS

### Papers

- Lee, H., Jang, Y., Kwon, S., Park, M-H, **Mitra, G.** (2017): The role of mechanical stratigraphy in the lateral variations of thrust development along the central Alberta Foothills, Canada. In review, *Geoscience Frontiers*, volume in honor of Prof. Mo
- Mitra, G.**, Boyer, S. E. (2017): Duplexes as slip transfer zones: Application to the Himalayan fold-thrust belt. In review, *Current Science*, volume in honor of D. Mukhopadhyay
- Boyer, S. E., **Mitra, G.** (2018): Fold duplexes. Accepted (pending revision), *Journal of Structural Geology* 40<sup>th</sup> Anniversary Issue.
- Kreuzer, R. L., Darrah, T. H., Grove, B. S., Moore, M. T., Warner, N. R., Eymold, W. K., Whyte, C. J., **Mitra, G.**, Jackson, R. B., Vengosh, A., Poreda, R. J. (2018): Structural and hydrogeological controls on hydrocarbon and brine migration into drinking water aquifers in southern New York. *Groundwater* 56, 1-20. doi: 10.1111/gwat.12638
- Bono, R. K., Tarduno, J. A., Dare, M. S., **Mitra, G.**, Cottrell, R. D. (2018): Cluster analysis on a sphere: Application to magnetizations from metasediments of the Jack Hills, Western Australia. *Earth and Planetary Science Letters* 484, 67-80. doi.org/10.1016/j.epsl.2017.12.007
- Cottrell, R. D., Tarduno, J. A., Bono, R. K., Dare, M. S., **Mitra, G.** (2016): The inverse microconglomerate test: Further evidence for the preservation of Hadean magnetizations in metasediments of the Jack Hills, Western Australia. Submitted, *Geophysical Research Letters*, 43, 1-6, doi: 10.1002/2016GL068150
- Goteti, R., **Mitra, G.** (2016): Evolution of relay zones in normal faulted terranes: integrating field geological studies with forward geomechanical models. *American Rock Mechanics Association* 16-397, 11 p.
- Bhattacharyya, K., **Mitra, G.**, Kwon, S. (2015): Geometry and Kinematics of the Darjeeling – Sikkim Himalaya, India: Implications for the evolution of the Himalayan fold-thrust belt. *Journal of Asian Earth Sciences* 113, 778 – 796.
- Bhattacharyya, K., **Mitra, G.** (2014): Spatial variations in deformation mechanisms along the MCT zone: implications for the evolution of the MCT in the Darjeeling - Sikkim Himalaya. *Journal of Asian Earth Sciences* 96, 132 -147.
- Yonkee, A., Weil, A. B., **Mitra, G.** (2013): Transect of the Sevier and Laramide orogenic belts, northern Utah to Wyoming: Evolution of a complex geodynamic system. *The Geological Society of America Field Guide* 33, 1-55.
- Goteti, R., **Mitra, G.**, Becene, A., Sussman, A., Lewis, C. (2013): Three-dimensional

- finite element modeling of fault interactions in rift-scale normal fault systems: Implications for the late Cenozoic Rio Grande rift of north-central New Mexico. Geological Society of America Special Paper 494, 157-184.
- Sussman A. J., Chase, C. G., Pueyo, E. L., **Mitra, G.**, Weil, A. B. (2012): The Impact Of Vertical-Axis Rotations On Shortening Estimates, *Lithosphere* 4, 383 –394.
- Kwon, S., **Mitra, G.**, (2012): An alternative interpretation for the map expression of 'abrupt' changes in lateral stratigraphic level near transverse zones in fold-thrust belts, *Geoscience Frontiers* 3, 401-406 doi: 10.1016/j.gsf.2012.01.001
- Bhattacharyya, K., **Mitra, G.** (2011): Strain softening along the MCT zone from the Sikkim Himalaya: Relative roles of quartz and micas. *Journal of Structural Geology* 33, 1105 – 1121. doi:10.1016/j.jsg.2011.03.008
- Mitra, G.**, K. Bhattacharyya (2011): The Use of Cleavage-Bedding Relations and Mesoscopic Structures in Interpreting Complex Duplex Geometries in Fold-Thrust Belts: Examples from the Rangit Duplex, Sikkim Himalaya. *Himalayan Geology* 32, 25 – 42.
- Mitra, G.**, Bhattacharyya, K., Mukul, M. (2010): The Lesser Himalayan duplex in Sikkim: Implications for variations in Himalayan shortening. *Journal Geol. Soc. of India* 75, 289-301.
- Bhattacharyya, K., **Mitra, G.** (2009): A new kinematic evolutionary model for the growth of a duplex – an example from the Rangit duplex, Sikkim Himalaya, India. *Gondwana Research* 16, 697-715.
- Mookerjee, M., **Mitra, G.** (2009): Understanding kinematic data from the Moine thrust zone in terms of a kinematics-based mathematical model of deforming thrust wedges. *Journal of Structural Geology* 31, 1556-1572.
- Kwon, S., Sajeev, K., **Mitra, G.**, Park, Y., Kim, S. W., Ryu, I-C. (2009): Evidence for Permo-Triassic collision in Far East Asia: the Korean collisional orogen. *Earth & Planetary Science Letters* 279, 340-349.
- Mookerjee, M., **Mitra, G.** (2008): Kinematics-based mathematical model for deforming thrust wedges. *Math. Geosci.* 40, 249-275.
- Kwon, S. & **Mitra, G.** (2007): New insights into the structural geology of the Gilson and northern Canyon mountains, central Utah. *Utah Geological Survey Miscellaneous Publications* 07-4, 31 p. + Map.
- Kwon, S., **Mitra, G.**, Perucchio, R. (2007): The Effect of Predeformational Basin Geometry in the Kinematic Evolution of a Thin-skinned Orogenic Wedge: Insights from Three-dimensional Finite Element Modeling of the Provo Salient, Sevier FTB, Utah. *Journal of Geophysical Research* 112, B02403.
- Kwon, S., **Mitra, G.** (2006): Three-dimensional kinematic history at an oblique ramp, Leamington zone, Sevier belt, Utah. *Journal of Structural Geology*, 28, 474-493.

- Ismat, Z., **Mitra, G.** (2005): Folding by cataclastic flow: evolution of controlling factors during deformation. *Journal of Structural Geology*, 27, 2181-2203.
- Kwon, S., **Mitra, G.** (2005): Provisional structural geologic map of the Jericho quadrangle, Juab County, Utah. Utah Geological Survey Open-File Report 444, 2 plates, scale 1:24,000.
- Ismat, Z., **Mitra, G.** (2005): Fold-thrust belt evolution expressed in an internal thrust sheet, Sevier orogen: The role of cataclastic flow. *Geological Society of America Bulletin* 117, 764-782.
- Strine, M., **Mitra, G.** (2004): Preliminary kinematic data from a salient-recess pair along the Moine thrust, northwest Scotland. *In "Orogenic Curvature: Integrating Paleomagnetic and Structural Analyses"*, eds. A. J. Sussman & A. B. Weil, Geological Society of America Special Paper 383, 87-107.
- Kwon, S., **Mitra, G.** (2004): Strain distribution, strain history and kinematic evolution associated with the formation of arcuate salients in fold-thrust belts: the example of the Provo salient, Sevier orogen, Utah. *In "Orogenic Curvature: Integrating Paleomagnetic and Structural Analyses"*, eds. A. J. Sussman & A. B. Weil, Geological Society of America Special Paper 383, 205-223.
- Kwon, S., **Mitra, G.** (2004): Three-dimensional finite-element modeling of a thin-skinned fold-thrust belt wedge: Provo salient, Sevier belt, Utah. *GEOLOGY* 32, 561-564. doi: 10.1130/G20415.1
- Mitra, G.**, Ismat, Z. (2001): Microfracturing associated with reactivated fault zones and shear zones: what can it tell us about deformation history? *In "The Nature and Tectonic significance of Fault Zone Weakening"*, eds. R. E. Holdsworth, R. A. Strachan, J. F. Magloughlin & R. J. Knipe, Geological Society of London Special Publication 186, 113-140.
- Ismat, Z., **Mitra, G.** (2001): Folding by cataclastic flow at shallow crustal levels in the Canyon Range, Sevier orogenic belt, west-central Utah. *Journal of Structural Geology* 23, 355-378.
- Gray, M. B., **Mitra, G.** (1999): Ramifications of four-dimensional progressive deformation in contractional mountain belts. *Journal of Structural Geology* 21, 1151-1160.
- Mitra, G.** (1998): Progressive development of foliation in a brittle deformation zone, 52-53. *In "Fault-related Rocks, a Photographic Atlas,"* eds. A. W. Snoke, J. Tullis & V. R. Todd, Princeton University Press, Princeton, NJ.
- Mitra, G.** (1998): Anastomosing deformation zones, p. 142-143. *In "Fault-related Rocks, a Photographic Atlas,"* eds. A. W. Snoke, J. Tullis & V. R. Todd, Princeton University Press, Princeton, NJ.
- Mitra, G.** (1998): Progressive development of foliation in a lower greenschist facies ductile deformation zone, p. 298-299 *In "Fault-related Rocks, a Photographic Atlas,"* eds. A. W. Snoke, J. Tullis & V. R. Todd, Princeton University Press,

Princeton, NJ.

- Newman, J., **Mitra, G.** (1998): Deformation and dynamic recrystallization of dolomite, p. 540-541. *In* "Fault-related Rocks, a Photographic Atlas," eds. A. W. Snoke, J. Tullis & V. R. Todd, Princeton University Press, Princeton, NJ.
- Mukul, M., **Mitra, G.** (1998): Finite strain and strain variation analysis in the Sheeprock thrust sheet, an internal thrust sheet in the Provo salient of the Sevier fold-and-thrust belt, central Utah. *Journal of Structural Geology* 20, 385-406.
- Mukul, M., **Mitra, G.** (1998): Controversies in the geology of the Sheeprock thrust sheet, Sevier fold-and-thrust belt, Utah: A re-examination based on new evidence. *Utah Geological Survey Miscellaneous Publications* 98-1, 1-15.
- Mukul, M., **Mitra, G.** (1998): Stratigraphy and structural geology of the southern Sheeprock and the adjacent West Tintic Mountains (Utah): A review and new interpretations based on structural analysis. *Utah Geological Survey Miscellaneous Publications* 98-1, 17-56.
- Lawton, T. F., Sprinkel, D. F., DeCelles, P. G., **Mitra, G.**, Sussman, A. J., Weiss, M. P. (1997): Sevier thrust belt central-Utah: Sevier Desert to Wasatch Paleau, p. 33 - 68. *In* *BYU Geology Studies Field Trip Guide Book pt. II*, eds Link, K. P. & Kowallis, B. J., Geological Society of America Annual Mtg.
- Mitra, G.** (1997): Evolution of salients in a fold-and-thrust belt: the effects of sedimentary basin geometry, strain distribution and critical taper, p. 59-90. *In* "Evolution of Geological Structures in Micro- to Macro-scales", edited by S. Sengupta. Chapman & Hall, London.
- Mitra, G.**, Sussman, A. J. (1997): Structural evolution of connecting splay duplexes and their implications for critical taper: an example based on geometry and kinematics of the Canyon Range culmination, Sevier Belt, central Utah. *Journal of Structural Geology* 19, 503-521.
- McNaught, M., **Mitra, G.** (1996): The use of finite strain data in constructing a retrodeformable cross section of the Meade thrust sheet, southeastern Idaho. *Journal of Structural Geology* 18, 573-583.
- Srivastava, P., **Mitra, G.** (1996): Deformation mechanisms and textures in mylonites along the North Almora thrust (Kumaon Himalayas, India): Evidence for heterogeneous deformation and conductive cooling during thrusting. *Journal of Structural Geology* 18, 27-39.
- DeCelles, P. G., **Mitra, G.** (1995): History of the Sevier orogenic wedge in terms of critical taper models, northeast Utah and southwest Wyoming. *Geological Society of America Bulletin* 107, 454-462.
- DeCelles, P. G., Lawton, T. F., **Mitra, G.** (1995): Timing of Sevier thrusting, central Utah. *Geology* 23, 699-702.
- Srivastava, P., **Mitra, G.** (1994): Thrust geometries and deep structure of the Outer and Lesser Himalaya, Kumaon and Garhwal (India): Implications for evolution of the

- Himalayan fold-and-thrust belt. *Tectonics*, 13, 89-109.
- Mitra, G.** (1994): Strain variation in thrust sheets and across the Sevier fold-and-thrust belt (Idaho -Utah - Wyoming): Implications for section restoration and wedge taper evolution. *Journal of Structural Geology* 16, 585-602.
- Newman, J., **Mitra, G.** (1994): Fluid-influenced deformation and recrystallization of dolomite at low temperatures along a natural fault zone, Mountain City Window, Tennessee. *Geological Society of America Bulletin* 106, 1267-1280.
- Mitra, G.** (1993): Deformation processes in Brittle deformation zones in granitic basement rocks: a case study from the Torrey Creek area, Wind River Mountains. *In "Basement behavior in Rocky Mountain foreland structure"*, eds. C. Schmidt, R.Chase, E. Erslev, Geological Society of America Special Paper 280, 177-195.
- Yonkee, W. A., **Mitra, G.** (1993): Comparison of basement deformation styles in the Rocky Mountain Foreland and Sevier Orogenic Belt. *In "Basement behavior in Rocky Mountain foreland structure"*, eds. C. Schmidt, R.Chase, E. Erslev, Geological Society of America Special Paper 280, 197-228.
- Newman, J., **Mitra, G.** (1993): Lateral variations in fault zone thickness as influenced by fluid-rock interactions, Linville Falls fault, North Carolina. *Journal of Structural Geology* 15, 849-863.
- McNaught, M.A., **Mitra, G.** (1993): A kinematic model for the origin of footwall synclines beneath thrust ramps. *Journal of Structural Geology* 15, 805-808.
- Gray, M. B., **Mitra, G.** (1993): Migration of deformation fronts during progressive deformation: Evidence from detailed structural studies in the Pennsylvania Anthracite region, U.S.A. *Journal of Structural Geology* 15, 435-449.
- Mitra, G.** (1992): Deformation of granitic basement rocks along fault zones at shallow to intermediate crustal levels. *In "Structural Geology of Fold and thrust Belts"*, eds. S. Mitra and G.W.Fisher, 123-144.
- Protzman, G. M., **Mitra, G.** (1990): Strain fabric associated with the Meade thrust implications for cross-section balancing. *Journal of Structural Geology* 12, 403-417.
- Mitra, G.** (1989): The Catoctin Mountain-Blue Ridge Anticlinorium in Northern Virginia, *In "Geometry and Deformation Fabrics in the Central and Southern Appalachian Valley and Ridge and Blue Ridge"* Leader N. B. Woodward. 28th International Geological Congress, American Geophysical Union Field Trip Guidebook T357, 31-44.
- Mitra, G.**, Hull, J. M., Yonkee, W. A., Protzman, G. M. (1988): Comparison of mesoscopic and microscopic deformational styles in the Idaho-Wyoming thrust belt and the Rocky Mountain foreland. *In "Interaction of the Rocky Mountain Foreland and Cordilleran thrust belt,"* eds. W.J. Perry and C. Schmidt, Geological Society of America Memoir 171, 119-141.



- Boyer, S. E., **Mitra, G.** (1988): Deformation of the basement-cover transition zone of the Appalachian Blue Ridge Province. *In* "Geometry and Mechanisms of Thrusting, with special reference to the Appalachians," eds. **G. Mitra** and S. Wojtal, Geological Society of America Special Paper 222, 119-136.
- Wojtal, S., **Mitra, G.** (1988): Nature of deformation in fault rocks from Appalachian thrusts. *In* "Geometry and Mechanisms of Thrusting with special reference to the Appalachians," eds. **G. Mitra** and S. Wojtal, Geological Society of America Special Paper 222, 17-34.
- Lukert, M.T., **Mitra, G.** (1986): Extrusional environments of part of the Catoctin Formation. Geological Society of America Centennial Field Guide - SE Section, 207-208.
- Wojtal, S., **Mitra, G.** (1986): Strain hardening and strain softening in fault zones from foreland thrusts. Geological Society of America Bulletin 97, 674-687.  
doi:10.1130/0016-7606(1986)97<674:SHASSI>2.0.CO;2
- Mitra, G.**, Boyer, S.E. (1986): Energy balance and deformation mechanisms of duplexes. Journal of Structural Geology 8, 291-304.
- Mitra, G.**, Yonkee, W.A. (1985): Relationship of Spaced Cleavage to folds and thrusts in the Idaho-Utah-Wyoming thrust belt. Journal of Structural Geology 7, 361-373.
- Mitra, G.**, Yonkee, W.A., Gentry, D.J. (1984): Solution cleavage and its relationship to major structures in the Idaho-Utah-Wyoming thrust belt. Geology 12, 354-358.  
doi:10.1130/0091-7613(1984)12<354:SCAIRT>2.0.CO;2
- Mitra, G.** (1984): Brittle to ductile transition due to large strains along the White Rock thrust, Wind River Mountains, Wyoming: Journal of Structural Geology 6, 51-61.
- Mitra, G.** (1982): Brittle-ductile transition in basement rocks, Wind River Mountains, Wyoming (USA). Mitt. aus dem Geol. Inst. ETH Zurich, Neue Folge 239a, p.214-218.
- Mitra, G.**, Lukert, M.T. (1982): Geology of the Catoctin-Blue Ridge Anticlinorium in Northern Virginia. Central Appalachian Geology, NE-SE GSA Field Trip Guidebooks, Am. Geol. Inst. 83-108.
- Mitra, G.**, Frost, B.R. (1981): Mechanisms of deformation within Laramide and Precambrian deformation zones in basement rocks of the Wind River Mountains. Contributions to Geology 19, 161-173.
- Mitra, G.**, Elliott, D. (1980): Deformation of basement in the Blue Ridge and the development of the South Mountain cleavage. Proceedings "Caledonides in the USA: I.G.C.P. Project 27: Caledonide Orogen, Va. Polytech. Inst. and State Univ. Memoir 2, 307-312.
- Mitra, G.** (1979): Ductile deformation zones in Blue Ridge basement rocks and estimation of finite strains. Geological Society of America Bulletin Part I, 90, 935-951.

**Mitra, G.** (1978): Ductile deformation zones and mylonites: the mechanical processes involved in the deformation of crystalline basement rocks. *American Journal of Science* 278, 1057-1084.

**Mitra, G.** (1977): The mechanical processes of deformation of granitic basement, and the role of ductile deformation zones in the deformation of Blue Ridge basement rocks in northern Virginia. Ph.D. thesis, The Johns Hopkins University, University Microfilms, 219 p.

## Books

Marshak, S., **Mitra, G.** (1988): "**Basic Methods of Structural Geology**", Prentice Hall, New York 435 p.

**Mitra, G.**, Wojtal, S. editors (1988): "Geometry and Mechanisms of Thrusting, with special reference to the Appalachians," *Geological Society of America Special Paper* 222, 236 p.

## Abstracts

Boyer, S. E., **Mitra, G.** (2018): Fold duplexes. Geological society of America Rocky Mountain – Cordilleran Meeting Abstracts.

Goteti, R., **Mitra, G.**, Agar, S. M., Zuhlke, R. (2018): Geomechanical forward modeling for prediction of sub-seismic deformation in traps and seals: A numerical case study of normal fault relay zones in layered rocks. GEO Conference and Exhibition, Bahrain

Kreuzer, R., Darrah, T., **Mitra, G.**, Poreda, J. (2018): Noble gas, hydrocarbon and water geochemistry of groundwater in the Northern Appalachian Basin: Insights on the mechanisms and pathways for hydrocarbon-rich brine migration. American Association of Petroleum Geologists Annual Meeting.

Brink-Roby, D., **Mitra, G.**, Yonkee, W. A., Evans, M. A. (2017): Fluid sources, pathways, and driving forces within fold-thrust belts: the central Wyoming salient of the Sevier orogeny. Geological Society of America Annual Meeting Abstracts, Paper 26-12.

Brink-Roby, D., **Mitra, G.**, Yonkee, W. A., Evans, M. A. (2017): Fluid migration through the Wyoming salient of the Sevier fold-thrust belt. Geological Society of America Northeast-Northcentral Meeting Abstracts, Paper 11-10.

- Kaempfer, J. M., Mitra, G. (2016): Plastic to cataclastic transitional deformation of the Santaquin basement complex in the Charleston – Nebo thrust sheet, Central Utah. Geological Society of America Annual Meeting Abstracts 48. Paper 265-13.
- Brink-Roby, D., **Mitra, G.**, Evans, M. A., Yonkee, W. A. (2016); Fluid flow systems associated with the Meade thrust, Wyoming salient, Sevier fold-thrust belt. Geological Society of America Annual Meeting Abstracts 48. Paper 201-12.
- Boyer, S. E., Mitra, G. (2016): Duplexes as slip-transfer zones: An updated synthesis. Geological Society of America annual Meeting Abstracts 48, Paper 53-10.
- Walsh, T. B., Ditzler, L. P., Mitra, G. (2016): Determining the factors that control natural fracture characteristics in the Appalachian Plateau. Geological Society of America Annual Meeting Abstracts 48, Paper 4-11
- Landry, K. E., Evans, M.A. Brink-Roby, D., Yonkee, W. A., **Mitra, G.** (2016): A comparison of the fracture and fluid history of two anticlines, the Thomas Fork anticline in the Wyoming salient and the Berwick anticline in the Pennsylvania Appalachians. Geological Society of America NE Section Meeting Abstracts Paper 33-10.
- Rajesh Goteti R., **Mitra, G.** (2016): Evolution of the three dimensional strain field in a relay zone: Integrating field studies with three dimensional finite element modeling. Abstract 397, American Rock Mechanics Association Symposium, Houston TX.
- Kreuzer, R., Darrah, T. H., Vengosh, A., **Mitra, G.**, Poreda, R. (2015): A structural framework for interpreting the spatial distribution and geochemical variation of natural gas and salt-rich groundwater in shallow aquifers of south-central NY. Geological Society of America Annual Meeting Abstracts 47, 799-800.
- Brink-Roby, D., **Mitra, G.**, Yonkee, A., Evans, M. A. (2015): Characterizing the regional fluid-flow system of the Wyoming salient, Sevier fold-thrust belt. Geological Society of America Annual Meeting Abstracts 47, 152.
- Walsh, T.B., **Mitra, G.** (2014): Understanding the Geologic Controls of Fracture Formation in the Northern Appalachian Basin. AAPG Eastern Section Student Expo.
- Walsh, T.B., Mitra, G. (2014): Understanding the Regional Fracture Network in the Northern Appalachians; AAPG Student Expo Houston, TX.
- Walsh, T.B., **Mitra, G.** (2014): Comparing the Fracture Network in the Northern Appalachians at the Surface and Depth, AAPG Marcellus and Utica / Point Pleasant Workshop.
- Walsh, T.B., Darrah, T., Poreda, B., **Mitra, G.**, (2014): Relationships between Regional Fluid Migration and Fractures in the Marcellus Shale, Geol. Soc. America Northeastern Section Meeting Abstracts
- Walsh, T. B., Darrah, T. H., Poreda, R., **Mitra, G.** (2013): Relationships between regional fluid migration and fractures in the Marcellus shale. Geological Society of America Annual Meeting Abstracts 45, xxx.

- Kreuzer, R., Darrah, T. H., **Mitra, G.**, Vengosh, A., Poreda, R. (2013): Structural controls on Marcellus brine migration into shallow Upper Devonian aquifers of south-central NY. Geological Society of America Annual Meeting Abstracts 45, xxx.
- Baker, E. P., McKnight, M. L., Samuels, J. X., **Mitra, G.** (2012): Geological mapping and structural analysis of Blue Basin at John Day Fossil Beds National Monument, Oregon. Geological Society of America Annual Meeting Abstracts 44, 557.
- Darrah, T. H., Walsh, T., **Mitra, G.**, Hannigan, R., Poreda, R. (2012): Microscale trace element mapping of mineralized fractures using cryogenic LA-ICP-MS. Geological Society of America Annual Meeting Abstracts 44, 488.
- Walsh, T., Baker, E. P., Darrah, T. H., Poreda, R., **Mitra, G.** (2012): Understanding the effect of large scale structures on the regional fracture network in the Appalachian Basin. Geological Society of America Annual Meeting Abstracts 44, 487.
- Bhattacharyya, K., **Mitra, G.** (2012): Lateral Variation in shortening in the Himalayan fold-thrust belt: Insights from regional balanced cross section. Rock Deformation & Structures II, Lucknow, India Abstracts, 22.
- Bhattacharyya, K., **Mitra, G.** (2012): Geometry and Kinematics of the Darjeeling - Sikkim Himalaya, India: Implications for the Evolution of the Himalayan Fold-Thrust Belt. European Geophysical Union Annual Meeting Abstracts.
- Baker, E. P., **Mitra, G.**, Walsh, T. B., (2012): Fracture mapping in the Marcellus Formation and Onondaga Limestone to determine the tectonic history of the Appalachian Plateau and significance of the Seneca Stone thrust. Geological Society of America NE-NC Section Mtg. Abstracts 44, 97.
- Walsh, T. B., Baker, E. P., Veeneman, K., **Mitra, G.**, (2012): Comparing patterns of low angle shear fracturing and jointing in the Appalachian Plateau and Valley-and-Ridge of Pennsylvania and New York. Geological Society of America NE Section Mtg. Abstracts 44, 97.
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Goteti, R., **Mitra, G.** (2006): Three dimensional finite element modeling to understand the role of fault interaction in the evolution of relay zone structures: implications for the Cenozoic Rio Grande rift. Geol. Soc. of Am. Annual Meeting Abstracts 38, p.

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Zadins, Z., **Mitra, G.** (1986): Brittle-ductile deformation along thrust faults: an example from the Hudson Valley thrust belt. Geol. Soc. Am. Ann. Mtg. Abstracts 18, 799.

**Mitra, G.**, Wojtal, S. (1986): Temporal and spatial changes in deformation along the southern Appalachian Blue Ridge thrust zone. Geol. Soc. Am. Ann. Mtg. Abstracts 18, 697.

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**Mitra, G.** (1986): The deformation of crystalline basement under lower greenschist facies conditions - an example from the Blue Ridge Province, Virginia. Geol. Soc. Am. NE Sec. Mtg. Abstracts 18, 56. (Invited paper).

Protzman, G. M., **Mitra, G.** (1985): Emplacement history of a thrust sheet based on analysis of pressure solution cleavage and deformed fossils. Geol. Soc. Am. Ann. Mtg. Abstracts 17, 694.

**Mitra, G.** (1985): Field evidence on factors controlling the transition from brittle to ductile modes of faulting. Seismo. Soc. Am. Ann. Mtg. Abstracts, Earthquake Notes 55, 11. (Invited paper).

- Wojtal, S., **Mitra, G.** (1985): Strain-softened cataclasites on Valley & Ridge thrust. Geol. Soc. Am. SE Mtg. Abstracts 17, 143. (Invited paper).
- Zadins, Z. Z., **Mitra, G.** (1985): Thrusting and cleavage development in the Little Mountains, New York. Geol. Soc. Am. NE Mtg. Abstracts 17, 71. (Invited paper).
- Yonkee, W. A., **Mitra, G.**, Hull, J. (1984): Basement - cover relationship in Laramide foreland thrust sheet of the Wyoming Province. Geol. Soc. Am. Ann. Mtg. Abstracts 16, 702.
- Mitra, G.**, Boyer, S. E. (1984): Energy balance and deformation mechanisms of duplexes. Abstracts to International Conf. on "Chevauchement et Deformation," University Paul Sabatier, Toulouse, France, p. 68.
- Mitra, G.** (1984): Mechanical processes of development of low grade mylonites in crystalline basement rocks. Geol. Soc. Am. NE Sec. Mtg. Abstracts 16, 51 (Invited paper).
- Mitra, G.**, Yonkee, W. A. (1984): Spaced cleavage and its relationship to folds and thrusts in the Idaho-Utah-Wyoming thrust belt of the Rocky Mountain Cordilleras. Abstracts for Geol. Soc. Australia Struc. Geo. Tectonic Studies Group International Conf. on "Multiple Deformation and Foliation Development," Bergmagui, Australia. Struc. & Tectonics Newsletter 9, 32.
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- Wojtal, S., **Mitra, G.** (1983): Strain hardening by mesoscopic deformation during emplacement of foreland thrust sheets. Geol. Soc. Am. Ann. Mtg. Abstracts 15, 722.
- Boyer, S. E., **Mitra, G.** (1983): Relationship between deformation of crystalline basement and sedimentary cover at the basement/cover transition zone of the Appalachian Blue Ridge. Geol. Soc. Am. Ann. Mtg. Abstracts 15, 532.
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- Mitra, G.** (1982): Brittle-ductile transition in basement rocks, Wind River Mountains, Wyoming (U.S.A.). Presented at "International Conf. on Planar and Linear Fabrics of Deformed Rocks," arranged by Tectonic Studies Group (London) and Geol. Inst., ETH Zurich.
- Yonkee, W. A., **Mitra, G.** (1982): Solution cleavage in the Wyoming-Idaho thrust belt. Geol. Soc. Am. Rocky Mtn. Sec. Mtg. Abstracts 14-6, 355.

**Mitra, G.** (1981): The brittle-ductile transition in basement massifs. Presented at Penrose Conference on "The significance and Petrogenesis of Mylonitic Rocks." (Invited Paper)

Hull, J., Smithson, S., **Mitra, G.**, Frost, B. R., Fountain, D. (1981): Velocities of mylonites and seismic detection of deformation zones in the crust. Trans. Am. Geophys. Union. EOS Abstracts 62, 400.

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**Mitra, G.**, Frost, B.R. (1980): Mechanisms of deformation within Laramide and Precambrian deformation zones in basement rocks of the WindRiver Mountains. "Rocky Mountain Foreland Basement Deformation" Joint Mtg. of Wyo. Geol. Assoc., Wyo. Geol. Surv. and University of Wyo. Abstracts, Wyo. Geol. Surv. Public Info. Circular 13, 31.

**Mitra, G.**, Elliott, D. (1979): Development of the South Mountain cleavage and deformation of basement in the Blue Ridge. I.G.C.P. conf. "Caledonides in USA" Abstracts. A16.

Hurich, C.A., **Mitra, G.**, Smithson, S. (1978): Gravity interpretation and structure of the Wind River mountains near the COCORP crustal reflection profile, Wyoming. EOS, Trans. Am. Geophys. Union 59-2, 1138.

**Mitra, G.** (1976): The role of ductile deformation zones in the deformation of Blue Ridge basement. Geol. Soc. Am. NE-SE Sec. Mtg. Abstracts 8-2, 230.

**Mitra, G.** (1975): Shear zones and mylonites: A look at the mechanical processes in the deformation of basement. Geol. Soc. Am. Ann. Mtg. Abstracts 7-7, 1202.

## INVITED TALKS

2010 Florida International University, Miami, FL

2007 Florida State University, Tallahassee, FL.

2006 Theme Session at Geol. Soc. Am. Annual Mtg., Philadelphia, PA.

2006 Yonsei University, Seoul, South Korea: Short Course on "Balanced cross-sections and kinematic reconstructions: tools in understanding the evolution of mountain belts."

2003 Calcutta University, Kolkata, India: Short Course on "Geometry and mechanics of

- fold-thrust belts.”
- 2003 Wadia Institute of Himalayan Geology, Dehra Dun, India.
- 2002 Penrose Conference on "Three-dimensional flow, fabric development, and strain in deformed rocks and the significance for mountain building processes: new approaches" Monte Verita, Switzerland.
- 2001 University of Arizona, Tucson, AZ.
- 2000 Bucknell University, Lewisburg, PA.
- 1999 Presidency College, University of Calcutta, Calcutta, India.
- 1999 University of Iowa, Iowa City, IO.
- 1996 Jadavpur University, Calcutta, India.
- 1995 Penrose Conference on "Fault related folds", Banff, Alberta, Canada.
- 1995 Symposium on "Recent advances in understanding the Sevier orogenic belt of western United States", Geological Society of America Rocky Mountain Section Meeting, Bozeman, MT.
- 1995 University of Arizona, Tucson, AZ.
- 1992 Penrose Conference on "Applications of Strain: From Microstructures to Orogenic Belts," Halifax, Nova Scotia, Canada.
- 1992 University of Texas - Austin, Austin, TX.
- 1992 Presidency College, University of Calcutta, Calcutta, India.
- 1991 "Nickelsen Symposium: Deformation Mechanisms in Fold-thrust Belts." Geological Society of America NE-SE Section Meeting, Baltimore, MD.
- 1991 Earlham College, Richmond, Indiana.
- 1990 Symposium on "Basement behavior in Rocky Mountain Foreland Structures." Geological Society of America Rocky Mountain Section Meeting, Jackson, WY.
- 1987 Presidency College, University of Calcutta, Calcutta, India.
- 1987 Penrose Conference on "Balanced Cross Sections," Rosendale, New York.
- 1987 Lehigh University, Bethlehem, PA.
- 1986 Symposium on "Comparative Structural Geology of basement massifs of the Appalachians." Geological Society of America NE Section Meeting,
- 1985 State University of New York, Albany, NY.

- 1985 State University of New York, Binghamton.
- 1985 Symposium on "Geomechanics of the Seismogenic Zone." Seismological Society of America Annual Meeting, Austin, TX.
- 1985 Symposium on "Geometry and Mechanisms of Appalachian Thrusting" (with S. Wojtal). Geological Society of America SE Section Meeting Knoxville, TN.
- 1985 Symposium on "Deformation of the Middle Appalachian Foreland: geometry, sequence, environment, mechanism" (with Z. Zadins). Geological Society of America NE Section Meeting, Lancaster, PA.
- 1984 Symposium on "Mylonites and Shear Zones of the Northern Appalachians." Geological Society of America NE Section Meeting, Providence, RI.
- 1983 Oberlin College, Oberlin, OH.
- 1983 Johns Hopkins University, Baltimore, MD.
- 1983 Cornell University, Ithaca, NY.
- 1981 Penrose Conference on "Mylonites," San Diego, CA.
- 1980 University of Rochester, Rochester, NY.
- 1980 Chevron Research Laboratory, La Habra, CA.

## RESEARCH GRANTS

- 2015 – 2018 National Science Foundation: Collaborative Research: Characterizing the Regional Fluid Flow System of the Wyoming Salient, Sevier Fold-Thrust Belt: Implications for Orogenic Wedge Deformation and Propagation.
- 2013 – 2017 Korea National Oil Company: Structural verification and restoration of prospect structures in Korea East Sea.
- 2011 – 2013 American Chemical Society Petroleum Research Fund: Fluid flow analysis in fractured rock using structural geometry and geochemical tracers (noble gas isotopes and trace elements)
- 2009 Exxon-Mobil Corporation: Forward modeling of structural evolution using finite element methods.
- 2005 - 2010 National Science Foundation: Variations in deformation and kinematics along and across the Himalayan arc through time: Insights from the Darjeeling – Sikkim – Tibet transect.

- 2005 - 2008 IGPP – Los Alamos National Laboratory: Geometry, Kinematics and Dynamics of Relay Zones in Extensional/Transtensional Settings.
- 2002 – 2006 National Science Foundation: 3-D geometry of the Moine thrust and its implications for 3-D strain distribution and thrust sheet kinematics.”
- 2000 - 2002 National Science Foundation: Folding by large scale cataclastic flow at shallow crustal levels in the internal portion of the Sevier orogenic belt.
- 1998 - 2001 American Chemical Society Petroleum Research Fund: Evolution of fracture networks accommodating strain during fold tightening under shallow crustal conditions.
- 1999 - 2000 U.S. Geological Survey – EDMAP: Geologic mapping on west side of Canyon Mountains, West-Central Utah.
- 1994 -1998 National Science Foundation (with S. E. Boyer, University of Washington): Strain distribution within the Lewis thrust sheet and northern Sawtooth thrust belt: Compatibility with critical wedge model.
- 1994 -1996 National Science Foundation: A study of strain variation and rheology in an internal thrust sheet, Sheeprock Mountains, Utah: Implications for fold-and-thrust belt evolution.
- 1992 -1994 American Chemical Society Petroleum Research Fund: Growth history of a fault propagation fold, Canyon Range, Utah.
- 1990 -1993 National Science Foundation: The use of deformation profiles and strain histories in drawing balanced restorable cross sections and evaluating kinematics in an internal thrust sheet.
- 1990 - 1993 National Science Foundation: The influence of fault zone behavior on the geometry of thrust systems and emplacement history of thrust sheets.
- 1989 -1991 American Chemical Society Petroleum Research Fund: Tectonothermal evolution of the Southern Anthracite region, Pennsylvania: implications for the development of blind thrust systems.
- 1989 -1990 National Geographic Society: Intermediate depth structure of the Kumaon Himalayas, India.
- 1987 -1989 National Science Foundation: Thermal and tectonic history of the Hudson Valley-Little Mountains thrust belt, using structural geometries, thermal indices and thermal modeling.
- 1985 -1988 National Science Foundation: Structural geometry and strain history of a foreland-hinterland transition thrust sheet: An approach to understanding complex hinterland structures in thrust belts.
- 1985 -1986 Envirogas Inc.: Structural and thermal evolution of the Appalachian thrust

belt, eastern New York.

- 1984 -1985 Envirogas Inc.: Structural and thermal evolution of the northern Appalachian thrust belt, eastern New York.
- 1982 -1984 National Science Foundation: Geologic and geophysical studies of Archean crust in the Wind River Mountains: An approach to understanding deep seismic reflections.
- 1980 -1982 National Science Foundation (with B.R. Frost and S.B. Smithson): Geologic and geophysical studies of Archean crust in the Wind River mountains: An approach to understanding deep seismic reflections.
- 1979-1981 American Chemical Society Petroleum Research Fund: Study of finite strains, deformation mechanisms, and stress-gradients in deformed Nugget sandstones of the Wyoming thrust belt.
- 1979-1980 Chevron Oil Field Research Company: Study of deformation mechanisms at low metamorphic grades within the deformed Nugget sandstones of the Wyoming thrust belt.
- 1978-1979 University of Wyoming (Faculty Research grant-in-aid): "Tectonic relationship of basement uplifts and thrusting in the northern Wyoming thrust belt.

## GRADUATE STUDENTS

### University of Rochester

Alice Bandeian, current MS student

Sarah Austin, current Ph.D. student.

David Brink-Roby, current Ph.D. student.

Rebecca Kreuzer, PhD (2017) (co-advisor)

Thesis: A structural framework for understanding the spatial distribution and geochemical variation of natural gas- and salt-rich groundwater in shallow aquifers of south-central New York.

Geochemist, Stantec Consulting Services Inc., Rochester, NY

Jenna Kaempfer, M.S. (2016)

Thesis: Transitional deformation of the Santaquin Basement Complex in the Charleston-Nebo thrust sheet in Central Utah.

PhD student, University of Illinois, Urbana-Champaign



Talor Walsh, Ph.D. (2015)

Thesis: The Role of Faults and Fractures on Subsurface Fluid Flow in the Marcellus Shale of the Appalachian Plateau in Western New York.  
Assistant Professor, Millersville University of Pennsylvania.

Elizabeth Baker, M.S. (2012)

Thesis: Fracture mapping in the Marcellus Formation and Onondaga Limestone to determine the tectonic history of the Appalachian Plateau and the significance of the Seneca Stone thrust.

Lisa Imamura, M.S. (2011)

Thesis: Microstructural evidence for strain-softening along the Main Central thrust zone in the Darjeeling-Sikkim Himalaya.

Kathakali Bhattacharyya, Ph.D. (2010)

Thesis: Geometry and kinematics of the fold-thrust belt and structural evolution of the major Himalayan fault zones in the Darjeeling – Sikkim Himalaya, India.  
Associate Professor, IISER, Kolkata, India

Srinivasa Rajesh Goteti, Ph.D. (2009)

Thesis: Kinematic and mechanical evolution of relay zones in normal faulted terranes: integrating field studies in the Rio Grande rift of north-central New Mexico and three dimensional finite element modeling.  
Research Geologist, Aramco Research Center - Houston, Houston, TX

Matthew Strine (Mookerjee), Ph.D. (2005)

Thesis: Implications of three-dimensional thrust surface geometry on thrust sheet kinematics: Integrating field analysis with a kinematics-based mathematical model for the Moine thrust zone, NW Scotland.  
Associate Professor, Sonoma State University, Sonoma, CA.

Sanghoon Kwon, Ph.D. (2004)

Thesis: Three-dimensional evolution of a fold-thrust belt salient: Insights from a study of the geometry, kinematics and mechanics of the Provo salient, Sevier belt, Utah, and from three-dimensional finite element modeling  
Professor, Yonsei University, Seoul, South Korea.

Zeshan Ismat, Ph.D. (2002)

Thesis: Mechanics of folding by cataclastic flow, and its role in the evolution of the Canyon Range thrust sheet, Sevier fold-thrust belt, west-central Utah.  
Associate Professor, Franklin & Marshall college, Lancaster, PA.

Daniel Heimgartner, M.S. (1997)

Thesis: Structural geology of the southern termination of the Lewis thrust fault, northwestern Montana.  
Geotechnical consultant, Virginia

Malay Mukul, Ph.D. (June, 1996)

Thesis: Structure and kinematics of foreland-hinterland transition zone of the Cordilleras, Sheeprock Mountains, Utah.  
Professor, IIT-Bombay, Mumbai, India.

Aviva Joy Sussman, M.S. (December, 1995)  
Thesis: Microstructural studies and kinematics of the footwall of the Canyon Range thrust, Sevier fold-and-thrust belt, Utah.  
Geologist at Los Alamos National Laboratory, Los Alamos, NM.

Praveen Srivastava, Ph.D. (December, 1992)  
Thesis: Stratigraphy, deep structure, and, structural evolution of the Kumaon and Garhwal Himalaya (India).  
Geologist at Shaw Environmental Inc., Houston, TX.

Julie Newman, Ph.D. (December, 1992)  
Thesis: Characteristics of fault zone deformation: examples from the Southern Appalachians.  
Professor, Texas A & M University, College Station, TX.

Mary Elizabeth Gray, Ph.D. (July, 1991)  
Thesis: Progressive deformation and evolution of the Southern Anthracite Region, Pennsylvania.  
Professor, Bucknell University, Lewisburg, PA.

Nuria Pequera, M.S. (May 1991)  
Essay: Growth history of a fault-propagation fold: An example from the Canyon Range, Central Utah.  
Deceased November 7, 1991.

Mark McNaught, Ph.D. (December, 1990)  
Thesis: The use of retrodeformable cross-sections to constrain the geometry and interpret the deformation of the Meade Thrust sheet, southeastern Idaho and northern Utah.  
Associate Professor & Department Chair, Mount Union College, Alliance, OH.

Zintars Z. Zadins, Ph.D. (May, 1989)  
Thesis: Structural and thermal evolution of the Northern Appalachian thrust belt of eastern New York.  
Senior Geologist, Dames & Moore, Buffalo, NY.

Joseph M. Hull, Ph.D. (1988)  
Thesis: Studies on evolution of the Archean crust and superplastic deformation within Archean shear zones, Wind River mountains, Wyoming.  
Associate Professor, Seattle Central Community College, Seattle, WA.

Karen Lumino, M.S. (1987)  
Thesis: Field and microstructural relationships within the Carthage-Colton mylonite zone, Adirondack Mountains of New York.  
Environmental Protection Agency, Boston, MA.

Jane Gilotti, Ph.D., Johns Hopkins University (1987)  
Thesis: The geometric, metamorphic and mechanical relationship of fabric development to thrust emplacement.  
Professor, University of Iowa, Iowa City, IO.

Gretchen M. Protzman, M.S. (1985)

Thesis: Geometry and progressive deformation in the folded Meade thrust sheet in the Whiskey Flats area of the Idaho thrust belt.

Project Director, Exxon Production Research Co., Houston, TX. Deceased.

Zintars Z. Zadins, M.S. (1983)

Thesis: Structural analysis of the Northern Appalachian fold and thrust belt at Cementon, New York.

Senior Geologist, Dames & Moore (Environmental Consultants), Buffalo, NY

Secondary Advisor to:

F. Moreno – current PhD student

R. Puranik – current PhD student, Materials Science

R. Bono (2017)

B. Kreuzer (2017)

L. Li, Ph.D. (2016)

M. Dare, M.S. (2016)

N. Kar, Ph.D. (2015)

J. Nelson, M.S. (2011)

B. Hough, Ph.D. (2011)

J. Voronov, M.S. (2010)

D. Auerbach, M.S. (2009)

A. Smirnov, Ph.D. (2002)

R. Cottrell, Ph.D. (2000)

M. Meyers, M.S. (1999)

R. Duan, M.S. (1999)

H. Moffat, M.S. (1998)

C. Dowling, M.S. (1998)

W. Taylor, Ph.D. (1996)

D. Noel, M.S. Mechanical Engineering (1996)

A. Sheldon, Ph.D. (1995)

C. VerStraeten, Ph.D. (1995)

X. Liu, M. S. (1995)

R. Cole, Ph.D. (1993)

K. Ridgway, Ph.D. (1992)

M. Rhoades, M.S. (1992)

B. Faggart, Jr., Ph.D. (1990)

N. Srimal, Ph.D. (1986)

J. Talpey, M.S. (1984)

M. Kramer, M.S. (1983)

W. Adolph Yonkee, M.S. (1983)

Thesis: Relationship between mineral equilibria and deformation mechanisms during formation of solution cleavage in the Crawford thrust sheet, Idaho-Wyoming thrust belt.

Professor and Department Head, Weber State University, Ogden, UT.

Dianna J. Gentry, M.S. (1983)

Thesis: Metamorphic conditions and timing of cleavage formation from studies of thrust sheets and their synorogenic conglomerates in the Utah- Idaho-Wyoming thrust belt.

David A. Swauger, M.S. (1982)

Thesis: Structural geology of the Green River Lakes area, Wind River range, Fremont County, Wyoming.

Peter W. Wolberg, M.S. (1982)

Thesis: Stratigraphy and structure of the Montpelier 7 1/2' quadrangle, Idaho.

Douglas M. Bland, M.S. (1982)

Thesis: Geology and structure of the Pocatello Range, Bannock County, Idaho.

Mary E. Moran, M.S. (1981)

Thesis: Structural geology of the Commissary Ridge area, Bonneville County, Idaho.

#### Secondary Advisor to:

R.E. Mueller, M.S. (1982)

K.E. Karlstrom, Ph.D. (1981)

W. Williams, M.S. (1980)

G. Valenti, M.S. (1980)

K.L. Buelow, M.S. (1980)

D.R. Lageson, Ph.D. (1980)

S.D. Sheriff, Ph.D. (1980)

D. Gwinner, M.S. (1979)

L. Van Ingen, M.S. (1978)

G. Holden, Ph.D. (1978)

## UNDERGRADUATE STUDENTS

### University of Rochester

Alice Bandeian, B.S. (2017)

Thesis: Microstructural study of deformation in fault rocks from the Peruvian Andes.

Brianna Rockwell, B.S. (2016)

Thesis: Bezier curves and their use in classifying folds, with examples from the French Slate, Medicine Bow Mountains, Wyoming.

Jenna Kaempfer, B.A. (2015)

Thesis: Generations of deformation within the Santaquin basement complex, Santaquin, Utah.

Leah Sabbeth, B.S. (2013)

Thesis: Fracture patterns in rocks exposed to high-energy explosions: a microtectonic study.

Beth Meyers, B.S. (2012)

Thesis: A microstructural study of the tectonic history of the Towanda fault zone in the Appalachian Plateau, Pennsylvania.

Josh Pawlicki, B.S. (2012)

Thesis: Visualizing fluid flow in fractures.

Elizabeth Baker, B.S. (2011)

Thesis: Determining the tectonic history of the Marcellus Formation based on fracture populations.

Lisa Imamura, B.S. (2010)

Thesis: A microstructural study of the Main Central thrust zone in the Darjeeling – Sikkim Himalaya.

Julia Nelson, B.S. (2010)

Thesis: The frontal Ramgarh thrust fault zone in the Darjeeling - Sikkim Himalaya of India: a microstructural study.

Margaret Popek, B.S. (2007)

Thesis: Depth to detachment estimates for the Tanos and West Tanos faults, Hagan embayment, New Mexico.

Allyson O’Kane (2003)

Thesis: Large-scale surficial land movement: Landslide or normal faulting.

Cristina Luis, B. S. (2001)

Thesis: ViewFrac: Software tools for fracture network visualization.

Sachiko Tanikawa, B.S. (1997)

Thesis: Evolution of the Canyon Range syncline in the Mine Hollow area, Canyon Range thrust sheet, Central Utah segment of the Sevier fold-and-thrust belt.

Thad Respet, B.S. (1996)

Thesis: Cleavage development in the Lewis thrust sheet, Glacier National Park, Montana and its implications for deformation history.

Laura Silliphant, B.S. (1995)

Thesis: Viability of the microstructural point count method: an example from central Utah based on quantification of deformation within thrust sheets overprinted by extension.

Jeffrey Trop, B.S. (1994)

Thesis: Petrology of the Late Cretaceous to Paleocene strike-slip Cantwell Basin, Central Alaska Range.

Aviva Sussman (1993)

Thesis: Deformation characteristics based on microstructural studies of part of the Sheeprock thrust sheet (West Tintic Mountains, Utah)

Stefanie Brachfeld (1989)

Thesis:

Secondary Advisor to:

Taylor Schweigel, B.S. (2011)

Jeffrey Folger, B.S. (2011): Field work in Appalachian Plateau of New York.

Mary Dzaugis, B.S. (2011)

Hannah McDonough, B.S. (2010): Field work in Rocky Mountains of Wyoming-Idaho-Utah.

Stephanie Mason, B.S. (2009): Field work in Rocky Mountains of Wyoming-Idaho-Utah and Rio Grande Rift, New Mexico.

Alexander Aronovitz, B.S. (2009): Field work in Rio Grande Rift, New Mexico.

Allison Sail, B.S. (2008)

Johanna Smith, B.S. (2008)

Christopher Hacker, B.S. (2007)

Holly Brown, B.S. (2006)

Christopher Hayes, B.S. (2005)

Eric Senecal B.A. (2004): Field work in Rocky Mountains in Utah.

Kassandra Lacerda, B.S. Env.Sc. (2002): Field work in Rocky Mountains in Utah.

Rory McFadden, B.S. Bio-Geo (2001): Field work in Rocky Mountains in Utah.

Thomas Kindling, B.S. (2000): Field work in Rocky Mountains in Utah.

Adam Krawiec, B.S. (1999): Field work in Rocky Mountains in Utah.

Michael Nugent, B.A. (1996): Field work in Rocky Mountains in Montana.

Zeshan Ismat, B.S. Env. Sc. (1996)

Cassandra Fenton, B.A. (1994): Field work in Rocky Mountains in Montana.

Daniel Holm, B.A. (1984): Field work in Rocky Mountains in Idaho.

Gretchen M. Protzman, B.A. (1983): Field work in Rocky Mountains in Idaho.