



geoscience

geothermal energy

mineralogy

kinetics of noble gases

tectonics

thermochronology

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Dr. Baldwin is a professor of Earth Sciences with more than 25 years of experience in determining thermal histories preserved as isotopic abundance variations in minerals. Current research activities investigate the tectonic evolution of plate boundaries on Earth, and environmental conditions required for the origin of life on habitable planets. She directs the Syracuse University Noble Gas Isotopic Research Laboratory, a leading laboratory for noble gas studies of minerals. She regularly teaches courses in mineralogy, petrology and thermochronology. She also applies her expertise in heat flow and thermodynamics to help promote geothermal energy as a renewable energy alternative to non-renewable hydrocarbon based energy resources.

Education:

1988 Ph.D. Geology, State University of New York at Albany

1984 M.Sc. Geology, State University of New York at Albany

1980 B.Sc. Geology, Hobart & William Smith Colleges

Recent Research Projects:

Setting the Stage for Life: From Interstellar Clouds to Early Earth and Mars, NASA Astrobiology Institute. PI: Whittet, D., Co-PIs: Watson, E.B., Ciolek, G., Ferris J., Delano J., Gaffey, M., Baldwin, S.L., Wayne Roberge, W., Swindle T., and McGown, L. <http://www.origins.rpi.edu/>

This study includes:

- 1) noble gas experiments on the mineral jarosite to determine when and under what conditions water was present on Mars, and
- 2) noble gas diffusion experiments on lunar impact glasses to assess the timing of impact events on the moon.

Collaborative Research: How Is Rifting Exhuming the Youngest HP/UHP Rocks on Earth?

National Science Foundation. PI: Baldwin, S.L., Co-PIs: Abers, G., Buck, R., Gaherty, J., Hacker, B., Fitzgerald, P, Mann, P, Plank, T., and Webb, L.

This interdisciplinary project aims to determine mechanisms for the formation and exhumation of ultrahigh pressure (UHP) metamorphic rocks. Dr. Baldwin's particularly focuses on unraveling the pressure-temperature-time histories of rocks in an obliquely convergent plate boundary zone.

Recent Scholarship:

Miller, S., S.L. Baldwin, and P.G. Fitzgerald, "**Transient fluvial incision and active surface uplift in the Woodlark Rift of eastern Papua New Guinea,**" *Lithosphere*, vol.4, pp. 131-149, 2012.

Baldwin, S.L., P.G. Fitzgerald, and L.E. Webb, "**Tectonics of New Guinea,**" *Annual Review Earth Planet Sciences*, vol. 40, pp. 495-520, March 2012.

Kula, J. and S.L. Baldwin, "**Jarosite, argon diffusion, and dating aqueous mineralization on Earth and Mars,**" *Earth and Planetary Science Letters*, vol. 310, pp. 314–318, Oct. 2011.

Links to Affiliated Centers:

The New York Center for Astrobiology
<http://www.origins.rpi.edu>



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