

**NELIA W. DUNBAR**

New Mexico Institute of Mining and Technology  
Socorro, NM, 87801

**Date of Birth:** July 1, 1962

<https://geoinfo.nmt.edu/staff/dunbar/home.html>

**EDUCATION:**George School

Graduated, 1979

Mount Holyoke College

BA received summa cum laude in geology, 1983

overall GPA 3.76 GPA in geology 3.90

Honors thesis: Mineralogical and geochemical investigation of Cascade Range tephra.

New Mexico Institute of Mining and Technology

MS in geology, 1985

PhD in geochemistry, 1989

Dissertation: Investigation of volatile contents and degassing systematics of rhyolitic magmas from the Taupo Volcanic Zone, New Zealand.

New Mexico Institute of Mining and Technology/Arizona State University

Post Doctoral Researcher. Pre-eruptive volatile contents of the Bishop Tuff, Bandelier Tuff, and Taupo Ignimbrite. 1989-1991

**HONORS:**

-Mary Lyon Scholar (Mt. Holyoke College) Distinguished young alumna

-Sarah Williston Scholar (top 15% of class after sophomore year)

-Phi Beta Kappa

-Sigma Xi

**EMPLOYMENT:**

Geochemist/Adjunct Faculty: Aug. 1992-present. New Mexico Institute of Mining and Technology. Research on magmatic processes and trace element mobility in hydrothermal systems. Lead scientist for electron microprobe laboratory.

Research Associate: March, 1991-Aug. 1992. Oak Ridge National Labs/University of Tennessee. Petrology and gas geochemistry of In Situ Vitrification project.

**LIST OF PUBLICATIONS:****Five most relevant publications:**

CATHER, S.M., DUNBAR, N.W., MCDOWELL, F.W., MCINTOSH, W.C., and SCHOLLE, P.A., 2009, Climate forcing by iron fertilization from repeated ignimbrite eruptions: The icehouse-silicic large igneous province (SLIP) hypothesis: *Geosphere*, v. 5, p. 315-324.

DUNBAR, N.W., and KURBATOV, A.V., 2011, Tephrochronology of the Siple Dome ice core, West Antarctica: correlations and sources: *Quaternary Science Reviews*, in press  
<http://dx.doi.org/10.1016/j.quascirev.2011.03.015>.

DUNBAR, N. W., MCINTOSH, W. C., and ESSER, R. P., 2008, Physical setting and tephrochronology of the summit caldera ice record at Mt. Moulton, West Antarctica: *Geological Society of America Bulletin*, v.120, p. 796-812.

DUNBAR, N.W., VOISINS, D.T., and ZIELINSKI, G.A., 2003, Tephra layers in the Siple Dome and Taylor Dome ice cores, Antarctica: Sources and correlations: *Journal of Geophysical Research*, v. 108, no. B8, p. 2374-2385.

WILCH, T.I., MCINTOSH, W.C., and DUNBAR, N.W., 1999, Late Quaternary volcanic activity in Marie Byrd Land: potential  $^{40}\text{Ar}/^{39}\text{Ar}$ -dated time horizons in future West Antarctic ice and marine cores, *Geol. Soc. Am. Bull.*, 111, 1563-1580.

**Five other publications**

- DUNBAR, N. W., 2005, Quaternary Volcanism in New Mexico: New Mexico Museum of Natural History and Science Bulletin, v. 28, p. 95-106.
- DUNBAR, N.W., 2010, Valles Caldera National Preserve, *in* Price, L.G., ed., The Geology of Northern New Mexico's Parks, Monuments and Public Lands, Volume 1: Socorro NM, New Mexico Bureau of Geology and Mineral Resources, p. 135-144.
- DUNBAR, N.W. AND HERVIG, R.L., 1992. Volatile and trace element composition of melt inclusions from the Lower Bandelier Tuff: Implications for eruptive style and magma chamber processes. *J. Geophys. Res.*, 97, 15151-15170.
- KELLY, P. J., DUNBAR, N. W., KYLE, P. R., and McINTOSH, W. C., 2008, Refinement of the late Quaternary geologic history of Erebus volcano, Antarctica using Ar-40/Ar-39 and Cl-36 age determinations: *Journal of Volcanology and Geothermal Research*, v. 177, p. 569-577.
- LICHT, K.J., DUNBAR, N.W., JENNINGS, A.E., and ANDREWS, J.T., 1999. Sedimentological evidence for the maximum extent of grounded ice in the western Ross Sea, Antarctica, during the last glacial maximum. *Geol. Soc. Am. Bull.*, 111, 91-103.

### **SYNERGISTIC ACTIVITIES**

My main synergistic activities fall into two categories: educational and public outreach and service to the greater scientific and engineering community involving electron microprobe analysis. In term of educational outreach, I am involved in a number of teacher training workshops each year, including the FEMA-sponsored "Seismic Sleuths and Tremor Troup" as well as in-service workshops on "Geology of New Mexico" and annual multi-day "Rockin' around New Mexico" workshops for secondary school teachers. As part of this workshop participation, I have prepared a curriculum on volcanic hazards that a number of teachers have incorporated into their science teaching. I have also been on the thesis committees of several Masters of Science Teaching candidates. In addition, I give talks to numerous school groups on Antarctica, volcanoes, or geology of New Mexico, as well as preparing articles for "Lite Geology" an educational publication produced by the New Mexico Bureau of Geology and Mineral Resources, as well as publishing papers about New Mexico volcanology in peer-reviewed publications that are available and accessible to the general public (see reference list under "other publications"). For information about some of these activities, please see <http://geoinfo.nmt.edu/education/home.html>.

As lead scientist for the New Mexico Tech electron microprobe laboratory, I'm also involved in advising and assisting scientists and engineers from outside my immediate organization with various types of technically challenging electron microprobe work.

### **COLLABORATORS AND OTHER AFFILIATIONS:**

List of Collaborative Workers: Dr. J. Amato (New Mexico State University), Dr. Y. Asmerov (University of New Mexico), Dr. R. Aster (New Mexico Tech), Dr. P. Bauer (New Mexico Tech), Dr. K Beratan (University of Pittsburg), Dr. A. R. Campbell (New Mexico Tech), Dr. K. Cooper (University of Washington), S. Connell (New Mexico Tech), Dr. C.E. Chapin (New Mexico Tech), Dr. J. Gamble (Victoria University), Dr. R. Harvey (Case Western Reserve), Dr. M. Heizler (New Mexico Tech), Dr. R.L. Hervig (Arizona State University), Dr. K. Karlstrom (University of New Mexico), Dr. A. Kurbatov (University of Maine), Dr. P.R. Kyle (New Mexico Tech), Dr. D. Love (New Mexico Tech), Dr. W. McIntosh (New Mexico Tech), Dr. V. McLemore (New Mexico Tech), Dr. F. Phillips (New Mexico Tech), Dr. T. Raimo (University of Finland), A. Read (New Mexico Tech), Dr. P. Scholle (New Mexico Tech), Dr. K.W. Sims (Woods Hole Oceanographic Institute), Dr. T. Sowers (Pennsylvania State University), Dr. J. White (University of Colorado), Dr. T. Wilch (Albion College), Dr. G.A. Zielinski (University of Maine).

List of Graduate and Postdoctoral Advisors: Dr. A.R. Campbell (New Mexico Tech); Dr. J.C. Eichelberger (University of Alaska); Dr. R.L. Hervig (Arizona State University), Dr. G. Jacobs (Oak Ridge National Laboratory), Dr. P.R. Kyle (New Mexico Tech); Dr. M. Naney (Oak Ridge National Laboratory), Dr. D.I. Norman (New Mexico Tech), Dr. R. Williams (University of Tennessee).

List of Students for whom I served as primary research advisor: D. Ennis, R. Horning. Total graduate students advised: 42