

**GEORGE E. HARLOW**  
CURATOR AND FULL PROFESSOR  
DEPARTMENT OF EARTH & PLANETARY SCIENCES

**HIGHEST DEGREE EARNED**

Ph.D.

**AREA OF SPECIALIZATION**

Mineralogy; crystal-chemistry; subduction related geology, particularly jadeite rock (jadeite jade); geology of gem deposits

**EDUCATIONAL EXPERIENCE**

B.A. Harvard University, 1971, magna cum laude

Ph.D. Princeton University, 1977

**PREVIOUS EXPERIENCE IN DOCTORAL EDUCATION**

CLASSES

Graduate courses in the theory and techniques in mineralogical crystallography and crystal chemistry (once at Princeton, three times for Columbia). "Rock-forming Minerals," W4115, Columbia University; graduate seminars in mineral sciences

APPOINTMENTS

Adjunct Professor, Graduate Program in Earth and Environmental Science, City University of New York.

Adjunct Senior Research Scientist, Lamont-Doherty Earth Observatory, Columbia University.

ADVISING

Kyla Simons, Ph.D.

Rondi Davies, post-doc

Kennet Flores, post-doc

Céline Martin, post-doc

**RESEARCH**

CURRENT PROJECTS

1. Jadeitites, albitites, eclogites, metabasites, serpentinite, and related rocks from Guatemala, Japan, Myanmar, Kazakhstan, Russia and elsewhere.
2. Source deposit determination for jadeite jade archaeological artifacts.
3. Mineralogy and paragenesis of minerals from Mogok Stone Tract of Myanmar: ruby, sapphire, spinel, peridot, skarn minerals, etc..
4. Characterization of mineral standards for spectroscopic analysis
5. Conventional and micromineral crystallography of minerals  
Links: <http://www.amnh.org/our-research/staff-directory/george-e.-harlow>  
<https://research.amnh.org/eps/jade/>  
<http://www.amnh.org/explore/amnh.tv/%28watch%29/our-research/solving-a-geological-puzzle-in-guatemala>

## **PUBLICATIONS (2009-2014)**

- Harlow, G.E., Sorensen, S.S., Sisson, V.B., and Shi, G. (2014) Chapter 10: The Geology of Jade Deposits. *In: The Geology of Gem Deposits (2<sup>nd</sup> Edition)*, (ed., Lee A. Groat), Short Course Handbook Series 44, Mineralogical Association of Canada, Quebec, pp. 305 – 374.
- Jiang, B., Harlow, G., Wohletz, K., Zhou, Z., and Meng, J. (2014) New evidence suggests pyroclastic flows are responsible for the remarkable preservation of the Jehol biota. *Nature Communications*, DOI: 10.1038/ncomms4151
- Lotti, P., Gatta, G.D., Rotiroti, N., Cámara, F., and Harlow, G.E. (2014) The high-pressure behavior of balliranoite: a cancrinite-group mineral. *Zeitschrift für Kristallographie – Crystalline Materials* 228, DOI: [10.1515/zkri-2014-1626](https://doi.org/10.1515/zkri-2014-1626)
- Flores, K., Martens, U., Harlow, G.E., Brueckner, H.K., and Pearson, N. (2013) Jadeitite formed during subduction: *In situ* zircon geochronology constraints from two different tectonic events in the Guatemala Suture Zone. *Earth and Planetary Science Letters* 371-372, 67-81.
- García-Casco, A., Knippenberg, S., Rodriguez Ramos, R., Harlow, G.E., Hofman, C., Carlos Pomo, J., and Blanco-Quintero, I.F. (2013) Pre-Columbian jadeitite artifacts from the Golden Rock Site, St. Eustatius, Lesser Antilles, with special reference to jadeitite artifacts from Elliot's, Antigua: Implications for potential source regions and long-distance exchange networks in the Greater Caribbean. *Journal of Archaeological Science* 40, 3153-3169.
- Stern, R.J., Tsujimori, T., Harlow, G.E., and Groat, L. (2013) Plate tectonic gemstones. *Geology*, 71, 723-726.
- Harlow, G.E. and Bender, W. (2013) A study of ruby (corundum) compositions from the Mogok belt, Myanmar: Searching for chemical fingerprints. *American Mineralogist* 98, 120-1132.
- Brownlee, S., Hacker, B.R., Harlow, G.E. and Seward, G. (2013) Seismic signature of hydrated mantle from antigorite crystal-preferred orientation (CPO). *Earth and Planetary Science Letters* 375, 395-407.
- Bartholomew, P.R., Mancini, F., Harlow, G.E., Deifel, N., Cahill, C. and Bernhardt, H-J. (2012) Greenwoodite, a new nesosilicate from British Columbia with a Ba-VOH coupled substitution and tetrahedral Fe: Description and Structure. *Canadian Mineralogist*, 50, 1233-1242.
- Hawthorne, F.C., Oberti, R., Harlow, G.E., Maresch, W.V., Martin, R.F., Schumacher, J.C., and Welch, M.D. (2012) Nomenclature of the amphibole supergroup. *American Mineralogist*, 97, 2031-2048.
- Shi, G., Grimaldi, D.A., Harlow, G.E., Wang, J. Wang, J. Yang, M. Lei, W., Li, Q. and Li, X. (2012) Age constraint on Burmese amber based on U-Pb dating of zircons. *Cretaceous Research*, 37, 155-163.
- Harlow, G.E., Tsujimori, T., and Sorensen, S.S. (2012) Introduction to jadeitites: New occurrences, new data and implications for subduction zone fluids. *European Journal of Mineralogy*, 24, 197-198.
- Cárdenas Párraga J., García-Casco, A., Harlow, G.E., Blanco-Quintero, I., Rojas Agramonte, K., and Kröner, A. (2012): Hydrothermal origin and age of jadeitites from Sierra del Convento Mélangé (Eastern Cuba). *European Journal of Mineralogy* 24, 313-331.
- Shi, G.H., Harlow, G.E., Wang, J., Wang, J., Ng, E., Wang, X., and Cao, S.M. (2012): Mineralogical

- studies and reviews of jadeitites and related rocks from Myanmar. *European Journal of Mineralogy* 24, 345-370.
- Tsujimori, T., and Harlow, G.E. (2012): Petrogenetic relations between jadeitite and associated high-pressure and low-temperature metamorphic rocks in worldwide jadeitite localities: A review. *European Journal of Mineralogy* 24, 371-390.
- Harlow, G.E., Summerfield, G.R., Davies, H., and Matisoo-Smith L. (2012) A jade gouge from Emirau island, Papua-New Guinea (Early Lapita context: 3300 BP): A unique jadeitite. *European Journal of Mineralogy* 24, 391-399.
- Brusentsova, T.N., Peale, R.E., Maukonen, D., Figueiredo, P., Harlow, G.E., Ebel, D.S., Nissinboim, A., Sherman, K., and Lisse, C.M. (2012) Laboratory far-infrared spectroscopy of terrestrial sulfides to support analysis of cosmic dust spectra. *Monthly Notices of the Royal Astronomical Society* 420, 2569-2579.
- Harlow, G.E., and Flores, K.E. (2011) Jadeite jade: Origin, sources, varieties and exploration. *Proceedings of International Symposium on Jade, Peking University, Beijing*; 13-22.
- Anders, M.H., Fouke, B.W., Zerkle, A.L., Tavarnelli, E., Alvarez, W. and Harlow, G.E. (2010) The Role of Calcining and Basal Fluidization in the Long Runout of Carbonate Slides: An Example from the Heart Mountain Slide Block, Wyoming and Montana, U.S.A. *Journal of Geology* 118, 577-599.
- Cárdenas-Párraga, J., García-Casco, A., Núñez-Cambra, K., Rodríguez-Vega, A., Francisco Blanco-Quintero, I., Harlow, G.E., and Lázaro, C. (2010) Jadeitite jade occurrence from the Sierra del Convento mélange (eastern Cuba). *Boletín de la Sociedad Geológica Mexicana* 62(1), 199-205.
- Brusentsova, T.N., Peale, R.E., Maukonen, D., Harlow, G.E., Boesenberg, J.S., and Ebel, D.S. (2010) Far infrared spectroscopy of the carbonate minerals. *American Mineralogist* 95, 1515-1522.
- Harlow, G.E., Sisson, V.B., and Sorensen, S.S. (2011) Jadeitite from Guatemala: Distinctions among multiple sources. *Geologica Acta* DOI: 10.1344/105.000001694.
- Sorensen, S.S., Sisson, V.B., Harlow, G.E., and Avé Lallemant, H.G. (2010) Element Residence and Transport During Subduction Zone Metasomatism: Evidence from a Jadeitite-Serpentinite Contact, Guatemala. *International Geology Review* 52 (9), 899-940.
- Simons, K.K., Harlow, G.E., Sorensen, S.S. Brueckner, H.K., Goldstein, S.L., Hemming, N.G., and Langmuir, C.H. (2010) Lithium isotopes in Guatemala and Franciscan HP-LT Rocks: insights into the role of sediment-derived fluids in the mantle wedge. *Geochimica et Cosmochimica Acta* 74, 3621-3641.
- Fu, B. Valley, J.W., Kita, N.T., Spicuzza, M.J., Paton, C., Tsujimori, T., Bröcker, M., and Harlow, G.E. (2009) Origin of zircons in jadeitite. *Contributions to Mineralogy and Petrology* 159, 769-780.
- Brueckner, H.K., Avé Lallemant, H.G., Sisson, V.B., Harlow, G.E., Hemming, S.R., Sorensen, S. S., Tsujimori, T. and Martens, U. (2009) Metamorphic reworking of a high-pressure-low temperature mélange along the Motagua fault, Guatemala: A revised record of Neocomian and Maastrichtian transpressional tectonics. *Earth and Planetary Science Letters* 284, 228-235.

**SPECIAL RECOGNITION/AWARDS**

Mineralogical Society of America (Fellow – 1996; Secretary 2004-7)

American Geophysical Union Geological Society of America

Society of Mineral Museum Professionals (president 1993-1996, secretary 1996 – 2000, board member, 1993-2005)