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Subduction, fluids, and accessory minerals: a celebration of the career of Sorena S. Sorensen

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Subduction, fluids, and accessory minerals: a celebration of the career of Sorena S. Sorensen

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ABSTRACT
This is a preface to the topical issue entitled ‘Subduction, Fluids, and Accessory Minerals: A Celebration of the Career of Sorena S. Sorensen’

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Topical editors’ preface

Sorena Svea Sorensen began her Earth science career as an undergraduate major in the Department of Geology at Pomona College, Claremont, CA, graduating with a B.A. in 1978. She then entered graduate school in UCLA’s Department of Earth and Space Sciences and initiated her petrologic and geochemical research on the Catalina Schist terrane off the coast of southern California. She received her doctorate for this work in 1984. Thus began a life-long fascination with – and dedication to – Mesozoic-Cenozoic convergent plate junctions, spanning across volcanic arcs, but most especially concentrating on subduction-zone metamorphic complexes. After a brief postdoc at UCLA, she joined the research scientific staff at the Smithsonian National Museum of Natural History in mid-1984, rising through the ranks to Supervisory Research Geologist GS-15. During this time, she was instrumental in developing the vision, and acquiring specimens for, the new rocks and minerals hall. Currently taking phased retirement, she remains scientifically active at the Smithsonian.

Sorena has initiated wide-ranging outreach studies, bringing both the beauty and quantitative appreciation of the mineralogic world to several generations of NMNH visitors. As a curator, she has organized numerous displays at the Museum, including 1988–1998, ‘Rocks’ and ‘Plate Tectonics’ galleries; 2002–2003, ‘Earth Development’; 2003–2004, ‘Rocks Build Cities’; 2008–2009, ‘Since Darwin: the Evolution of Evolution’; 2011, ‘Against All Odds: the Chilean Mine Rescue,’ and ‘Earthquakes Near and Far.’ In addition to serving as chair of the Department of Mineral Sciences from 2007–2010, Sorena has mentored a dozen summer interns, and another dozen pre-and postdoctoral fellows. At the same time, she has guided a similar number of senior Earth scientists in the analytical intricacies of SEM-cathodoluminescence (CL) imaging. Sorena was also a ‘grand aunt’ to many early career scientists outside the Smithsonian in the world of petrology, offering academic + career guidance and support to many. She was a core part of the female equivalent of an ‘old boys’ network in a hard-rock field in which females are major contributors, but remain a minority.

Over the years, her seminal research investigations have seamlessly combined detailed mineralogic and petrologic measurements, including pioneering CL imaging with state-of-the-art geochemical analytical data. Her metamorphic studies of the high-pressure Catalina Schist complex are classic and have provided new strictures on aqueous fluid geochemistry,
subduction-zone devolatilization, and partial melting processes (Figure 1). These studies have been enriched by comparisons with somewhat similar high-pressure mineral parageneses in NW Washington, the Dominican Republic, Guatemala, Myanmar, Venezuela, the South Urals, and Western Turkey. Sorena believes strongly in elucidating and understanding the field context for the samples she works on. This is obvious in the field picture of Sorena and friends in Guatemala (Figure 2; note who is wearing field boots and eager to find the high-pressure rocks!). Coupled research on the Mesozoic Andean volcanic arc of the Sierra Nevada has likewise concentrated on metasomatic hydrothermal interaction between aqueous fluids derived from Sierran plutons and the layered volcanic rocks into which they intruded (Figure 3). Finally, her love for, and detailed geochemical + SEM-CL study of the charismatic subduction-zone mineral jadeite is truly legendary. Let us hope that a new polymorph of NaAlSi$_2$O$_6$ will be discovered and duly named sorenaite!

In November 2015, Barb Dutrow, Jinny Sisson, and Sarah Penniston-Dorland organized a celebration to honour Sorena’s scientific career. A fitting venue was the Geological Society of America Annual Convention in Baltimore, MD, with scientific sessions focused on Sorena’s areas of expertise. Shortly after
conclusion of this eminently successful group of oral presentations and posters, Gary Ernst suggested that a follow-on set of technical papers be solicited dealing with Sorena’s main, and most passionate subjects of interest include subduction zone + arc processes and their geochemical, mineralogic, and petrologic products. The idea was that these topical contributions would be published together in a single issue of a leading Earth science journal. Bob Stern, Chief Editor of *International Geology Review* (IGR), was an enthusiastic supporter of the concept, paving the way for the diverse new research works presented in this special topical issue of IGR honouring Sorena and celebrating her many scientific accomplishments.

Sorena, your research thrust – and most especially, you, yourself – are the inspirations for this compendium. We hope that you will enjoy reading it!

**Figure 3.** Sorena traversing metavolcanic rocks in the Ritter Range, Sierra Nevada crest, 1992 (topical editors collection).