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Preface to the Gene Foord issue

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This issue of *American Mineralogist* is a tribute to the life and career of Eugene E. Foord. Gene was a mineral enthusiast like few this profession has ever seen. He loved everything about minerals—their occurrence, their chemistry and structure, and their aesthetics. He will be remembered especially for sharing his enthusiasm with so many of us. For university researcher and amateur collector alike, Gene was a source of samples, assistance, and abundant anecdotal humor. In this issue, a few of the many individuals who benefited from Gene's acquaintance or publications pay their respects to this very gifted and personable Fellow of the Society.

Gene's knowledge of minerals was expansive (e.g., Gaines et al. 1997), but he focused his attention on the mineralogy of granitic pegmatites, particularly of the Nb-Ta oxides, micas, and feldspars. Gene's mineralogical investigation for his Ph.D. dissertation on the Himalaya dike, Mesa Grande district, San Diego County, still represents one of the most comprehensive mineral-chemical studies of a single pegmatite body (Foord 1976). His work on the Himalaya dike included mineral structure and ordering phenomena, morphological variation, and the nature of chemical zonation and fractionation within individual phases, for example the evolution of garnet compositions across the pegmatite-aplite (also see Kleck and Foord, this issue). Gene's knowledge of pegmatites was truly first hand: he assisted many of the gem specimen miners in the San Diego County districts with the back-breaking labor of hard-rock mining.

All of the manuscripts for this issue follow the pegmatite theme in various ways. Some of Gene's close colleagues have completed a manuscript (Foord et al.) that reports the new mineral, simmonsite. It is named for Gene's close friend, William B. "Skip" Simmons. Simmonsite, which is related chemically and structurally to cryolite, comes from the Zapot pegmatite, an amazonite-bearing NYF (Nb-Y-F) type (Černý 1991) located in Nevada. This class of pegmatites greatly interested Gene, and he is well known for his studies of similar amazonite-bearing pegmatites in the Pikes Peak batholith, Colorado (Foord et al. 1995; Foord and Martin 1979; Kile and Foord 1998).

Six other papers in this issue pertain to the NYF type of granites and pegmatites. In a manuscript by Gene's USGS-colleagues, Kyle and Eberl use the crystal-size distributions of amazonite from miarolitic cavities in pegmatites of the Pikes Peak Batholith to deduce the principal mechanisms of crystal nucleation and growth. Smerekanicz and Dudas have investigated the compositions of fluid inclusions in the amazonite-bearing Morefield pegmatite (Amelia), Virginia, to map out the history of fluid evolution within and mixing between pegmatite and host rocks. A comprehensive mineralogical paper by Pezzotta et al. scrutinizes the crystal chemistry of gadolinite from NYF-type granites and pegmatites of the famous Baveno and Cuasso al Monte regions of northern Italy. Three papers present new data—one a new mineral species—for the complex minerals of Nb, Ta, and Ti. Galliski et al. describe the new species ferrotitanowodginite, one of the growing family of Nb-Ta-Ti-Sn oxides that formed the nexus of Gene's mineralogical investigations. Černý et al. further define the complex relations of niobian rutile with analyses of this and related phases from the McGuire (NYF) pegmatite in Colorado. Cooper et al. have defined the crystal chemistry and structure of sogdianite, a complex Li-Zr-silicate originally described from the alkaline granites of Dara-i-Pioz, Tajikistan.

The crystal chemistry of pegmatitic micas was another of Gene's primary interests (e.g., Foord et al. 1991, 1995; Kile and Foord 1998). In this issue, Hawthorne et al. have refined the crystal structure of a RbCs-phlogopite from the exocontact of the Red Cross Lake pegmatite, a chemically evolved member of the LCT (Li-Cs-Ta) class of deposits (Černý 1991).

Enrichment in beryllium is common to both the NYF and the LCT pegmatite types. That enrichment is typically expressed by the presence of beryl. Evensen et al. have examined experimentally the solubility of beryl in metaluminous to peraluminous hydrous melts as functions of temperature and the activities of Al and Si components in melt. Their results show a sharply retrograde solubility for beryl with decreasing temperature. This behavior helps to explain why beryl is a common phase in pegmatites, even at very low whole-rock Be values, if pegmatites arise from rapid cooling in relation to the rates of crystal nucleation and growth. The crucial question of relating crystal habits to environment of growth is the subject of a striking new model presented by Baker and Freda. Their simulation of crystal growth using the Ising model produces habits and crystal sequences that are consistent with natural pegmatitic fabrics, albeit at radically different scales.

Two papers provide important new contributions to the geology of pegmatites in San Diego Country, California—Gene Foord's favorite stomping ground. In Kleck and Foord, a long-time friend and colleague of Gene's has completed their study of the mineral chemistry of garnet and other indicator minerals through a composite layered aplite-pegmatite dike known as the George Ashley Block (Pala district). Webber et al. (including Foord) present a complementary investigation of the cooling history and crystallization dynamics in this and sev-

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eral other pegmatites in San Diego County. They conclude that these dikes must have cooled quickly—to subsolidus temperatures on the scale of days or weeks—and that some features of these pegmatites (e.g., the layered aplite units) are consistent with rapid crystallization.

Finally, Simmons and Webber offer a memorial tribute to their close friend and colleague. Their summary of Gene's accomplishments reveals the uncommon breadth of his knowledge and interests.

I thank the authors of these papers, the editors and publication staff, and other associate editors for their quick response to a short turn-around time on publication. All of us were motivated to complete this task by our desire to put Gene Foord's memory into a fitting and permanent record. Gene introduced me to the mines and miners of San Diego County, for which I am forever in his debt.

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