

## **Silica-undersaturated High Pressure Granulite From the Central Maine Terrane, CT, USA**

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The Acadian-Neocadian Brimfield Schist in the Central Maine Terrane (CMT) of Connecticut, USA, contains silica-saturated UHT rocks<sup>1</sup> as well as a silica-undersaturated garnet-spinel-corundum gneiss<sup>2</sup>. The silica-undersaturated gneiss is a high-pressure granulite with minimum equilibration conditions of ~1.8 GPa and ~1040 °C, estimated using pseudosection modeling and ternary feldspar reintegration thermometry of metamorphic antiperthites in leucosomes.

Pseudosections were constructed using Theriak/Domino ver. 4.02 with the Holland and Powell (2011) dataset<sup>3</sup> and the thermodynamic data file of D.K. Tinkham (ver. 02). Biotite TiO<sub>2</sub> content can exceed 6.5 wt%, yielding a Ti-in-biotite *T* estimate of ~1100°C at 1.8 GPa, consistent with the feldspar temperature estimate<sup>4</sup>. The *P-T* estimate is also consistent with experimental results on melt inclusions from silica-saturated rocks elsewhere in the CMT<sup>5</sup>. The near-eclogite facies *P-T* conditions necessitate metamorphic depths of 60-70 km, placing the rock at the root of the orogenic belt. Leucosomes are two feldspar ± biotite syenites; they provide compelling evidence that silica-undersaturated lithologies produce syenitic melts at high-pressure granulite conditions. Density calculations show that the garnet-spinel-corundum gneiss is dense enough to delaminate from the lower crust if feldspathic melt is extracted.

<sup>1</sup>Ague *et al.* (2013) *Geology* <sup>2</sup>Keller & Ague (2016) *GSA Abstracts with Programs* <sup>3</sup>Holland & Powell (2011) *J Met. Geology* <sup>4</sup>Wu & Chen (2015) *Sci. Bull.* <sup>5</sup>Ferrero *et al.* (2017) *EGU Geophys. Research Abs*