Abstract Submitted
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P-O and Al-O Bonding in Alumina-Calcia-Monazite Melts Studied by Raman Scattering and Ultra High-temperature NMR[1] ROBERT MARZKE, Physics and Astronomy, Arizona State University, Tempe, AZ 85287-1504, SUSAN BOUCHER, Chemistry and Biochemistry, Arizona State University, Tempe, AZ 85287-1604, JEREMY PIWOWARCZYK, Physics and Astronomy, Arizona State University, Tempe, AZ 85287-1504, GEORGE WOLF, Chemistry and Biochemistry, Arizona State University, Tempe, AZ 85287-1604 — Raman scattering and NMR of ^{27}Al have been used to investigate the structure of molten samples of ceramics in the Al_2O_3-CaO-$LaPO_4$ system. Raman spectra of quenched samples indicate the presence of PO_4 structures similar to those of metaphosphate glasses, involving Q_2 tetrahedralunits. NMR of ^{27}Al in melts shows strong 4-fold coordination, but also 5- and 6-fold Al-O bonding and diffusivities far more rapid than those expected for networked AlO_4 tetrahedra. Evidence that Al cross links tetrahedral chains, in addition to forming these tetrahedra, will be discussed.

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