

**Crystallization of lithium di- and metasilicate solid solutions
from Li₂O-SiO₂ glasses**

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Abstract

The devitrification behavior of fourteen glasses in the Li₂SiO₃-Li₂Si₂O₅ system has been studied by X-ray diffraction and microscopy techniques. Crystallization products are metastable lithium di- and metasilicate solid solutions (LS₂-ss, LS-ss). Unit cell constants indicated that the LS₂-ss composition ranges to ≈ 39 mol% Li₂O for temperatures below 550°C. For LS-ss a lithia deficient limit ≤ 40 mol% has been detected at 700°C. The nature of primary solid solution in a 40Li₂O·60SiO₂ glass is a function of the melting history as well as of the annealing conditions. Spherulithic crystallites were observed in this glass containing intergrowing sections of LS₂-ss and LS-ss.