

## Measurements of Water Solubility in Synthetic and Natural Carbonatite

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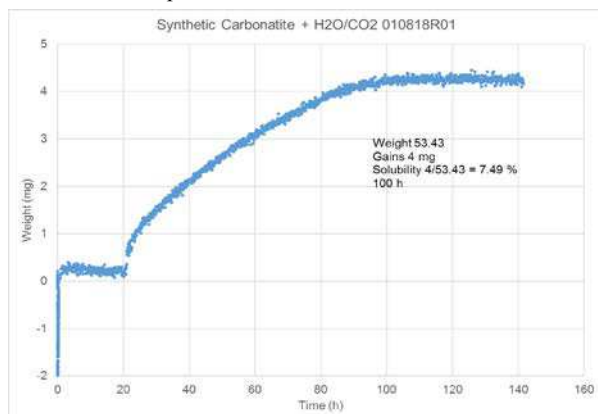
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Carbonatites are an important and interesting class of low melting magmas. On earth, the only known volcano with this low melting magma is Oldoinyo Lengai in Tanzania. Carbonatite volcanos may be active on Venus. We examined a synthetic carbonatite made from a mixture of CaCO<sub>3</sub>-Na<sub>2</sub>CO<sub>3</sub>-CaF<sub>2</sub>-NaF and a sample from Tanzania. A thermogravimetric method used in our laboratory for studying water vapor interactions with oxides has been adapted for these carbonatite studies. The synthetic material is made in-situ under a CO<sub>2</sub> atmosphere and then a stream of H<sub>2</sub>O/CO<sub>2</sub> is introduced. Representative results are shown below.



Weight gain indicated an apparent solubility of  $7.2 \pm 1.2\%$  H<sub>2</sub>O at 1 bar and 675°C for the synthetic material. It appears that water lowers the viscosity of the synthetic carbonatite and special steps have been taken to avoid creeping of the molten material up the crucible walls. In addition, samples of natural carbonatite have been characterized and solubility tests are in progress.