

## **The role of H<sub>2</sub>O in Martian magmatic systems**

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### **ABSTRACT**

We have estimated the water content of Mars' interior by using analyzed water contents of kaersutite inclusions from shergottites nakhlites chassignites (SNC) meteorites in conjunction with an experimentally-derived crystal-chemical model of kaersutite amphibole. This model predicts quantitatively the relationships between iron oxidation and hydrogen deficiency in the kaersutite. The H<sub>2</sub>O content of the magma from which the kaersutites in SNC meteorites could have crystallized is in the 100–1000 ppm range. That H<sub>2</sub>O content leads to an estimated water content of 1–35 ppm for a Martian mantle that could have been the source rock for such magmas.