

## **Pressure-temperature studies of talc plus water using X-ray diffraction**

**A.E. GLEASON,<sup>1,\*</sup> S.A. PARRY,<sup>2</sup> A.R. PAWLEY,<sup>2</sup> R. JEANLOZ,<sup>1</sup> AND S.M. CLARK<sup>1,2,3</sup>**

<sup>1</sup>Department of Earth and Planetary Science, University of California, Berkeley, McCone Hall 4767, Berkeley, California 94720, U.S.A.

<sup>2</sup>School of Earth, Atmospheric and Environmental Sciences, University of Manchester, Oxford Road, Manchester, M13 9PL, U.K.

<sup>3</sup>Advanced Light Source, Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, California 94720, U.S.A.

### **ABSTRACT**

X-ray diffraction measurements of natural talc plus water at combined pressures and temperatures of 0–15 GPa and 23–400 °C reveal the presence of a structural change that could be interpreted as a new high-pressure phase at 4.0 ( $\pm 0.5$ ) GPa, and raise the possibility that the newly inferred phase transition takes place in cold subducting slabs as a precursor to appearance of the 10 Å phase of talc.

**Keywords:** Talc, X-ray diffraction, high pressure, subduction