

## **High-Temperature Phase Transition in Natural Tremolite**

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Tremolite amphiboles are important constituents of hydrated basic and ultrabasic rocks and siliceous marbles in the greenschist and amphibolite facies. Knowledge of thermodynamic properties of tremolite is essential in estimating the P-T-t evolution of metamorphic rocks. In this paper we present new heat capacity data on natural tremolite with  $(\text{Mg}/\text{Mg}+\text{Fe}) = 0.86$  and  $0.945$ , in the temperature range from 300K to 1200K. The powder x-ray diffraction pattern of the starting material were indexed to a monoclinic unit cell with  $a=0.98\text{nm}$ ;  $b= 1.816\text{nm}$ ;  $c= 0.525\text{nm}$  and  $\beta= 105.0^\circ$ . Differential thermal analysis on the samples show a sharp endothermic peak at about  $1073\pm 10$  K. The heat capacity changes abruptly from  $995 \text{ J / mol.K}$  to  $1018 \text{ J/mol. K}$  at  $1070\pm 10$  K. The observed phase transition temperature is found to be in excellent agreement with the dehydration reaction temperature (  $1075$  to  $1104$  K) of synthetic tremolite into  $2 \text{ diopside} + 1.5 \text{ orthoenstatite} + \text{quartz} + \text{water}$ .