*American Mineralogist, Volume 99, pages 94–97, 2014*

# Thermal diffusivities of $MgSiO_3$ and Al-bearing $MgSiO_3$ perovskites

**Kenji Ohta[1,*], Takashi Yagi[2] and Kei Hirose[3]**

[1]Center for Quantum Science and Technology under Extreme Conditions, Osaka University, Toyonaka, Osaka 560-8531, Japan
[2]National Metrology Institute of Japan, National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki 305-8563, Japan
[3]Earth-Life Science Institute, Tokyo Institute of Technology, Meguro, Tokyo 152-8551, Japan

## Abstract

Thermal diffusivities of $MgSiO_3$ perovskite (MgPv) and $MgSiO_3$ perovskite containing 2 wt% $Al_2O_3$ (Al-MgPv) were measured at ambient conditions using the micro-spot heating angstrom method. The obtained values of thermal diffusivities of MgPv and Al-MgPv are $2.6 \pm 0.1$ and $2.4 \pm 0.1$ $mm^2/s$, respectively. Present result for MgPv is much higher than previously reported value of 1.7 $mm^2/s$. Substitution of aluminum into MgPv has little effect on its thermal diffusivity at ambient conditions, and such an impurity effect would remain insignificant at high pressures and high temperatures corresponding to the Earth's lower mantle.

**Keywords:** Thermal diffusivity, thermal conductivity, $MgSiO_3$ perovskite (MgPv), Al-bearing $MgSiO_3$ perovskite (Al-MgPv)