

Rapid Measurement of Two-dimensional Temperature Profile during Crystallization of Enstatite-Forsterite System

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Since the crystallization of chondrules are very rapid phenomena, we tried to develop the method to monitor the process by employing high speed TV system, in which recording up to 10,000 frame/s is possible. Using the image data we tried to calculate the 2-dimensional temperature profile during the crystallization from the melt of En-Fo system. Comparing the temperature from thermocouples with the intensity from the TV images did the calibration. Because the original images were obtained from visible light, we could get more detailed images (resolution, 0.02mm) when specially made optics are employed than the images of conventional thermography. This method was successfully applied to the actual crystallization process of En-Fo system in gravity and in microgravity.