

Abstract Submitted  
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**Does Hot Water Freeze Faster than Cold? Investigation of the Reproducibility and Causes of the Mpemba Effect** JOSEPH THOMAS, SUSAN LEHMAN, The College of Wooster — An investigation into the reproducibility and possible causes of the Mpemba effect has been performed. The Mpemba effect is the name given to the common observation by non-scientists that hot water appears to freeze faster than cold water.<sup>1</sup> Previous scientific studies of this effect have found conflicting results. These discrepancies appear to be due in part to inconsistent definitions of freezing based on visual observation. We have investigated the Mpemba effect by continuously monitoring the temperature of a container of water to determine the amount of time needed for the water to turn completely to ice, as indicated by the temperature falling below 0 °C. We have successfully observed the effect repeatedly and have found it to be dependent on the sample's temperature history rather than the sample temperature when placed into the freezer. Room temperature water which had been briefly heated to 100 °C then cooled froze approximately 50 % faster than room temperature water which had not been heated. The effect on the freezing time of increasing or decreasing the amount of dissolved gas in the water will also be discussed. 1. M. Jeng. Am. J. Phys. **74** 514 (2006).

Susan Lehman  
The College of Wooster

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