

Abstract Submitted  
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**Investigation into the Mpemba Effect: Variation in the Freezing Time of Water Dependent on Initial Temperature and Purity**<sup>1</sup> INGRID THVEDT, MARTHA ROSEBERRY, SUSAN LEHMAN, The College of Wooster — The observation that hot water sometimes appears to freeze more quickly than cold water, known as the Mpemba effect, has generated vigorous debate. Prior research [1] into the Mpemba effect has resulted in conflicting results, due to a variety of observation techniques, multiple definitions of freezing, and different water treatments. To clarify the previous results, we have tested multiple types of water and improved the sample monitoring. During cooling and freezing, each 50 g water sample is continually monitored by three thermistors at different depths. Samples of tap, distilled, and nanopure water were heated, heated and cooled, or boiled before being frozen. We monitor the time to reach freezing, the duration of freezing, and the total time to reach  $-7^{\circ}\text{C}$ . We observe the Mpemba effect most consistently in the length of the freezing transition in tap water. Observations of temperature variation during freezing will also be presented. [1] See the review by M. Jeng, *Am.J.Phys.* **74** 514 (2006).

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