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Modeling the Growth of H_2O-D_2O Nanodroplets SOMNATH SINHA, BARBARA E. WYSLOUZIL, The Ohio State University, GERALD WILEMSKI, Missouri University of Science and Technology — Using experimental data for water condensation in supersonic nozzles, including SAXS measurements of position-resolved nanodroplet size distributions [Wyslouzil, et al., *Phys. Chem. Chem. Phys.* **9**, 5353 (2007)], we test five different droplet growth models. Three nonisothermal growth models estimate temperature differences between the droplets and the carrier gas; the two isothermal models do not. In general, we found that none of the growth laws agrees well with the experimental data. Although the droplets should be hotter than the carrier gas for our experimental conditions, our results suggest that the nonisothermal models over predict the average droplet temperatures. This leads us to hypothesize that the average temperature is not a good estimate of the most likely temperature of the growing droplets. To accurately predict growth in the nanodroplet regime, droplet growth models will need to account better for the full distribution of temperatures of growing droplets because the main contribution to growth is likely to come from droplets cooler than the average.

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