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Differential AC-chip nanocalorimeter for measurements at low pressure MATHIAS AHRENBERG, HEIKO HUTH, CHRISTOPH SCHICK, University of Rostock, KENNETH KEARNS, MARK D. EDIGER, University of Wisconsin-Madison — We intend to use nanocalorimetry to investigate the formation of extraordinarily stable glasses prepared by vapor deposition. For that purpose we have built a vapor deposition chamber that will allow in-situ characterization of vapor-deposited films made from organic molecules. The use of the nanocalorimeter in the deposition system permits us to produce and investigate stable glasses under well controlled conditions. Moreover, the developed nanocalorimeter enables us to simultaneously measure the heat capacity at a particular frequency and the overall enthalpy change upon heating. A quartz crystal microbalance (QCM) is used to monitor film thickness and rate of deposition. For conventional DSC experiments on extraordinary stable glasses, the sample thickness must be on the order of 50 μm. The nanocalorimeter is able to measure films below 100 nm thick, and therefore, slower deposition rates can be explored. In this way, we expect to prepare and characterize glasses with even greater stability than is possible with current techniques.

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