SUPPORTING INFORMATION

Due to the range of particle diameters (~4-80 nm) over which primary particle size distribution varies1, a correction for non-continuum transport from the bulk phase to the surface should be considered based on the Knudsen number. A number of "transition regime" formulas have been proposed[2–6] to properly describe transport to particles of all sizes; the interpolation formula presented by Fuchs-Sutugin[2] was chosen for this work. The parameter ξ used in Eq. (8) was the correction factor to account for the nan-continuum effects that can be determined as follows:

$$\xi = \frac{1}{1 + lKn} \tag{S1}$$

$$l = \frac{{}^{4}/_{3} + 0.71\, Kn^{-1}}{1 + Kn^{-1}} \tag{S2}$$

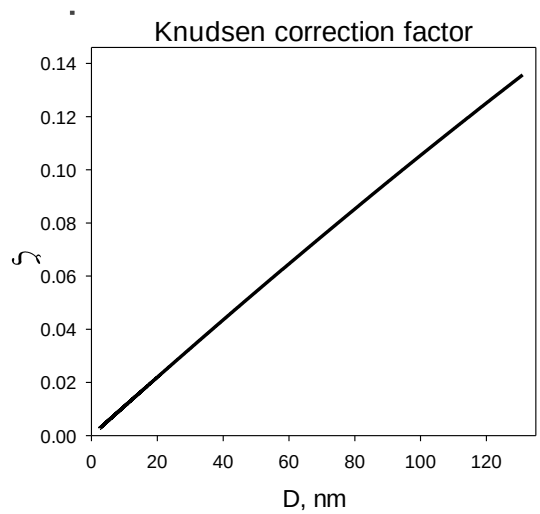

Figure S1. Knudsen correction effect

References:

(1) Liu, F.; Stagg, B. J.; Snelling, D. R.; Smallwood, G. J. Int. J. Heat Mass Transfer **2006**, 49 (3−4), 777−788.

(2) Fuchs, N. A.; Sutugin, A. G. Highly Dispersed Aerosols; Ann Arbor Science Publishers: Ann Arbor, MI, **1970**.

(3) Brock, J. R. J. Colloid Interface Sci. **1966**, 22 (6), 513−516.

(4) Sampson, R. E.; Springer, G. S. J. Fluid Mech. **1969**, 36 (3), 577−584.

(5) Shankar, P. N. J. Fluid Mech. **1970**, 40 (2), 385−400.

(6) Kulmala, M.; Wagner, P. E. J. Aerosol Sci. **2001**, 32 (7), 833−841.