**Atmospheric
Measurement
Techniques
Discussions**

Interactive comment on "A model of aerosol evaporation kinetics in a thermodenuder" by C. D. Cappa

Anonymous Referee #1

Received and published: 24 November 2009

In this manuscript a model calculation to describe the performance of a thermodenuder is given. Thermodenuders are used since many years, a number of papers giving experimental results on their performance and some simple calculations have been published, however, at least to my knowledge, no profound theoretical work has been published so far. In this sense this manuscript is a valuable complement to work on thermodenuders done so far. The paper is clearly written. There are some aspects which to my opinion at least should be discussed, if not included in the model: A very simple assumption of the temperature distribution has been made. In particular the radial gradient has been neglected. As the gas is heated/cooled via the tube wall this gradient is significant in the sections, where heating and cooling occurs. A justification for the assumption of a laminar flow (parabolic flow profile) should be given. In particular in the hating zone thermal turbulence could occur The neglect ion of losses by

thermophoresis should be justified/quantified Doing the model calculations with completely volatile particles is useful to demonstrate the features of the model. Adding an example for the more realistic case of particles, having a non-volatile core would be nice.

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 2749, 2009.