

## ***Interactive comment on “Homogeneous nucleation rates of nitric acid dihydrate (NAD) at simulated stratospheric conditions – Part I: Experimental results” by O. Stetzer et al.***

**O. Stetzer et al.**

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In response to your comment I want to make the following statements:

The nucleation rates in your paper (Tabazadeh et al., 2002) we refer to are for different mole fractions. In particular, these are  $X = 0.333$  as you already pointed out (figure 2a in your paper), but also for  $X = 0.275$  (figure 2b) and  $X = 0.246$  (figure 2c).

a) It is correct that, at the beginning of an experiment, we had typical molar ratios of about 0.2. However, during the course of the experiment this changed to higher ratios of up to 0.27 which was monitored online by FTIR-spectroscopy (page 2099, paragraph starting with line 12). Nucleation took place only at the higher molar ratios at the end of

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an experiment. This can be clearly seen in panels E in figures 3-5 of this manuscript. We will add the missing data (54 wt.-

b) The flat triangles you refer to are from Bertram et al. 1998 AND 2000. For the 2000 data the authors did a re-analysis of their size distributions using Mie scattering and got a new nucleation rate of  $4.4 \cdot 10^9 \text{ cm}^{-3} \text{ s}^{-1}$  (A. Bertram, personal communication, 2006).

c) If we would add our data - both, volume, and hypothetical surface nucleation rates - to figure 2b (this comes closest regarding molar compositions) in Tabazadeh et al. 2002, the agreement with Salcedo data is much better if you compare volume instead of surface nucleation rates.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 2091, 2006.

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