

***Interactive comment on* “Commentary on ”Homogeneous nucleation of NAD and NAT in liquid stratospheric aerosols: insufficient to explain denitrification” by Knopf et al.” by A. Tabazadeh**

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I thank Daniel Knopf for taking the time to review this letter. Below I will address some of the comments since most of issues have already been discussed in my previous letters to the referees and to Dr. Jungwirth.

Comment 1: Please note that in the Tabazadeh et al 2001 paper no parameterization of a nucleation rate function is given. The real function is given in the Salcedo et al. paper and this same function is used in our study. In fact in the Salcedo et al. paper they state in the ABSTRACT of their paper that PSCs can freeze according to the rate

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functions they give in their paper. In our paper, we have simply taken this one step further to show how the freezing rates they report will affect the denitrification process.

Comment 2: Please note that the PALMS instrument cannot be used to determine the chemical composition of organics, which are present in the aerosol. In the lab studies they made some known solutions and that is why they mention in the paper specific compounds such as HCHO, etc.. However, the samples, which they prepared of pure sulfuric acid-water droplets, always had (unknown) organic contamination. Also, please note that I am not saying that all laboratories have contamination in their samples. All I am saying is that lab samples MAY be contaminated and no one, as far as I know, has ever shown that laboratory prepared samples are pristine. In addition, we all know that cloud droplets in the stratosphere are perhaps devoid of organic molecules (the radiation field in the stratosphere will zap these types of sticky molecules) that can cause surface contamination.

Comment 3: I believe it is a fair statement to say that we all know supercooled bulk-sized samples of ternary solutions don't freeze in the laboratory and Molina et al. paper convinced me of this fact after I read their Science paper in 1993. Thus, at least in my opinion, publishing paper after paper stating that bulk-sized samples don't freeze is not helpful in learning much about why real particles in the stratosphere seem to freeze quite readily. Once a null conclusion is proven and published a few times, then I don't see how repeating the same experiments can shed further light on this subject.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 827, 2003.

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