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Atmospheric Chemistry and Physics Discussions

Interactive comment on "An aerosol chamber investigation of the heterogeneous ice nucleating potential of refractory nanoparticles" *by* R. W. Saunders et al.

R. W. Saunders et al.

r.w.saunders@leeds.ac.uk

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The authors thank both referees for their positive reviews of the paper and for their constructive suggestions for its improvement.

Responses to points raised by anonymous referee #1.

1. Contact angle uncertainties: Error bars arising from experimental uncertainties have been added to Figure 12 (contact angle versus T). For all three forms of iron oxide particle shown, the trends in variation of calculated angle are distinct from the associated error levels.

2. Suggested reference: The Cziczo et al., 2004 reference has been added in the Introduction section (Page 3, line 13)

3. Section lengths: Experimental - A paragraph (Page 8, lines 24-29; from 'Similar.. to ..RHi) has been removed and additional AIDA-study references cited for referral. The rest of the section includes references to instrument acronyms in the plots, so it is important to retain this in the paper.

Results - The text detailing threshold values has been deleted and reference made to Table 1.

Discussion - We would prefer to leave sections 5.1, 5.2 and 5.3 unaltered as these sections importantly account for the trends in threshold nucleation data in terms of the fundamental particle properties of composition, size and structure for each of the samples. We consider that this justifies the lengths of these sections.

4. Suggested reference: The Biermann et al. (1996) reference has now been cited, but we have also added text to indicate that the samples used in their study (predominantly whole or ground micrometeorites) are unlikely to be suitably representative of the composition and morphology of meteoric smoke particles (recondensed from the gas-phase), and consequently will likely have different particle surface and ice nucleating properties. This point was argued in the cited work of Bigg and Giutronich (1967), who questioned the validity of the conclusions made regarding nucleating properties in earlier studies which used meteorites.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 23271, 2009.