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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Study of the heterogeneous reaction of O_3 with CH_3SCH_3 using the wetted-wall flowtube technique" *by* M. Barcellos da Rosa et al.

Anonymous Referee #1

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In this manuscript the rate constant for the DMS/O3 reaction is determined using uptake measurements of O3 into aqueous solutions of DMS. The manuscript provides clear account of the background, motivation, and experimental design. The results are directly applicable to the chemistry of the marine troposphere. Therefore, I recommend that the paper will be accepted for publication after the authors have replied to the following minor questions:

Page 1953. Since the WWFT technique was used for the HenryŠs law constants determination, I recommend that the technique be first introduced in the section 2.1, not 2.2

Page 1953. I agree with the referee #2 that it seems from figure 1 that the DMS

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equilibration is not attained on the timescale of the experiment. What is the additional loss of DMS (after ˜5 sec interaction time) due to?

Page 1954. In Figure 2, what is the number density of ozone?

Page 1955. The presumption that a $>>$ g for ozone uptake can be substantiated by the measurements of Utter,R.G., J.B.Burkholder, C.J.Howard and A.R.Ravishankra, 1992: J.Phys.Chem., 96, 4973-4987, who reported the lower limit of a for ozone to be a$>$2x10ˆ3.

Page 1955. Equation (3) is not strictly valid. The term accounting for the liquid saturation (resistance due to solubility constraints) should be added, and an appropriate reference should be provided.

Page 1956, first line. Correct 'the lines the results..' to 'the lines are the results'

Page 1956. 'At high concentrations of DMS ($>$50mM)'. It would be useful to address the range of concentrations of O3 and DMS used in these experiments? I think the authors should also comment on the effect of the gas-phase DMS/ozone reaction at the highest concentrations used here.

Page 1960. Recently, Boucher et.al. (Boucher et.al., Atmos.Chem.Phys., 3, 49-65, 2003) have assessed the atmospheric importance of the aqueous-phase DMS/O3 reaction by including it in the global sulfur cycle model. It might be useful to discuss these modeling studies in the discussion section.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 1949, 2003.