

July 12, 2014

Dear JACS Editor,

We are submitting a manuscript entitled “Acid-Catalyzed Reactions of Epoxides to Atmospheric Nanoparticle Growth” by Wen Xu, Mario Gomez-Hernandez, Jeremiah Secrest, Song Guo, and Renyi Zhang for consideration of publication as a Communication in *JACS*. The main point of our work is that epoxides play an important role in stabilization and growth of newly formed nanoparticles in the atmosphere. Although new particle formation accounts for about 50% of the global aerosol production in the troposphere, the chemical species and mechanism responsible for the growth of freshly nucleated nanoparticles remain largely uncertain. We show a large size growth when sulfuric acid nanoparticles of 4-20 nm are exposed to epoxide vapors, with the growth rate consistent with those from atmospheric measurements. Given the large yield of epoxides from biogenic VOC oxidation and their role in new particle formation, current atmospheric models may considerably underestimate climate forcing of biogenic aerosols. We believe that our results represent a major breakthrough in the understanding of atmospheric new particle formation.

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Thank you for your attention to this matter.

Sincerely,

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