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**Ion-Molecule Chemistry For Detection of Atmospheric Gaseous Oxidized Mercury**[1] MATTHEW COOPER, JOHN ANTLEY, FRANSCICO GUZMAN, ALEXEI KHALIZOV, New Jersey Institute of Technology — The poor knowledge of the chemical speciation of oxidized mercury in the atmosphere hinders the understanding of mercury pathways in the environment. To address this problem, we investigated gas-phase reactions of a model compound (mercury dichloride, HgCl2) with sulfur hexafluoride anion (SF6-) and carbonate anion (CO3-), which are promising reagent ions for the detection of oxidized mercury compounds by Chemical Ionization Mass Spectrometry. The major objectives of our study were to identify conditions under which reagent ions react with the model compound selectively, producing a narrow range of ion products (or ultimately a single ion product) at a known yield. Product yields will be reported for a range of conditions, as well as the most probable pathways for the production of said products based on quantum-chemical calculations.

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