A SEARCH FOR INTERSTELLAR H_2DO^+

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The recent laboratory discoveries of submillimeter wave spectra of deuterated hydronium ions, H_2DO^+[a] and HD_2O^+,[b] have opened up the possibility to search for these fundamental deuterated molecular ions in dense clouds where deuterium fractionation occur efficiently. We have used the Caltech Submillimeter Observatory to search for the $0^+_{00} \rightarrow 1^+_{10}$ transition at 673.257007 GHz in IRAS16293A and Oph D.

So far the freezing of CO and N_2 has been the main issue of the depletion and deuterium fractionation, but this work adds new information on depletion and deuteration chemistry of O and O_2.

Our observational results and analyses will be presented.

[a] T. Furuya, S. Saito, & M. Araki, J. Chem. Phys. 127, 244314 (2007)

[b] T. Araki & S. Saito, J. Chem. Phys. 128, 034311 (2008)