OBSERVATION OF INTERSTELLAR H_3^+

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The long awaited initial detection[b] of H_3^+ in the interstellar medium provides unprecedented opportunites to directly characterize the physical and chemical properties of dense molecular clouds near young stellar objects. Recent observations in the 3.7 μm region using the CGS4 infrared spectrometer at the United Kingdom Infrared Telescope and the high-resolution Phoenix spectometer at the Kitt Peak National Observatory support the initial detection of H_3^+ and extend the use of H_3^+ as a chemical probe of the interstellar medium to other molecular clouds. The interstellar material towards many winter objects — GL961E, MonR2 IRS 2 and IRS 3, GL490, GL989, NGC2024 IRS 2, LkHα 101, W3 IRS 5, and Orion BN — have been searched in the spectral region of H_3^+, providing both positive (detection) and negative (upper limit) results. In addition, the data from the initial detection of H_3^+ in the summer objects GL2136 and W33A have been reprocessed to improve the resolution of the spectral lines.

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[b]T.R. Geballe and T. Oka, *Nature* 384, 334 (1996)