HCO^+ IN THE ENVELOPES OF OXYGEN-RICH STARS: EVALUATING THE ROLE OF ION-MOLECULE CHEMISTRY IN CIRCUMSTELLAR GAS

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The role of ion-molecule chemistry is not well understood. Theory has predicted HCO^+ as one of the most abundant detectable ions in oxygen-rich envelopes. However, there has never been a conclusive detection of HCO^+ in any circumstellar sources. Here we present the results of millimeter and submillimeter observations of the cation HCO^+ around evolved oxygen-rich stars. In recent observations, HCO^+ has been detected in the circumstellar shell of the oxygen-rich supergiant VY Canis Majoris. Further observations were conducted around the oxygen-rich stars IK Tau, NML Cyg, W Hya and TX Cam. Abundances of this molecule in these sources and implications for circumstellar chemistry will be discussed.