

## METAL-CONTAINING MOLECULES BEYOND THE SOLAR SYSTEM: A LABORATORY AND RADIO ASTRONOMICAL PERSPECTIVE

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Although the history of interstellar molecules began around 1970, with the millimeter-wave detection of CO in the Orion Nebula, metal-containing species have been somewhat elusive for astronomical searches. Only in the past two decades have metal-bearing molecules been identified in space, starting with metal halides (NaCl, KCl, AlCl, and AlF), and then metal cyanide and isocyanide species (MgNC, MgCN, NaCN, and AlNC). Moreover, the metal-containing molecules seemed to be present in a single astronomical object: the envelope of a dying, carbon-rich star, IRC+10216. However, with improvements both in laboratory spectroscopy and telescope sensitivity, it is becoming clear that the relevance of metal-containing species in astrophysics is increasing. Metal oxide and hydroxide species, such as AlO and AlOH, have recently been identified in interstellar space. Metal-containing molecules are now being found in other astronomical sources, such as the oxygen-rich shell surrounding VY Canis Majoris, a supergiant star. These new astronomical discoveries will be presented, as well as the laboratory measurements that made them possible. New directions in rotational spectroscopy of metal-bearing molecules will also be discussed.