THE ARO 1 mm SURVEY OF THE OXYGEN-RICH ENVELOPE OF SUPERGIANT STAR NML CYGNUS

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Although a number of molecular line surveys of carbon-rich circumstellar envelopes (CSE) have been performed, only one oxygen-rich CSE, that of VY Canis Majoris (VY CMa), has been studied in depth. The Arizona Radio Observatory (ARO) 1 mm survey of VY CMa showed a very different and interesting chemistry dominated by sulfur- and silicon-bearing compounds as well as a number of more exotic species. A similar survey of the oxygen rich star NML Cygnus (NML Cyg) from 215 to 285 GHz is currently under way using the ARO Sub-millimeter Telescope. Initial observations show that this circumstellar envelope appears to be as chemically rich as that of VY CMa. Molecules including ^{12}CO, ^{13}CO, ^{12}CN, ^{13}CN, HCN, HCO^+, CS, SO_2, SiO and ^{30}SiO have been observed in NML Cyg. Line profiles of this source also suggest that there may be multiple outflows and that the circumstellar envelope is not spherically symmetric. Current results will be presented.