PROBING THE CHEMICAL COMPLEXITY OF HIGH MASS STAR FORMING REGIONS

DOUGLAS N. FRIEDEL, *Department of Astronomy, University of Illinois at Urbana-Champaign, Urbana, IL 61801*; SUSANNA L. WIDICUS WEAVER[a], *Departments of Chemistry and Astronomy, University of Illinois at Urbana-Champaign, Urbana, IL 61801*.

Recent 1 mm CARMA observations of Orion-KL have shown that the known chemical differentiation in the region is much more complex than previously thought. The maps from Friedel & Snyder (2008)[b] show that both the nitrogen-rich hot core and oxygen-rich compact ridge regions are comprised of many smaller components, which is not a surprising result. However, the maps of acetone [$(CH_3)_2CO$] show that it is not co-spatial with other large oxygen-bearing species. Instead, acetone is only present in the smaller, partially-resolved regions where both large nitrogen-bearing species [e.g. ethyl cyanide, C_2H_5CN] and large oxygen-bearing species [e.g. dimethyl ether, $(CH_3)_2O$] overlap. This unexpected result cannot be explained by any of the current chemical models. In order to shed more light on this we have conducted additional high-resolution CARMA 3 mm observations of numerous complex molecules toward Orion-KL. We will present the results of these observations. We will also discuss the implications of these results in terms of the likely mechanisms for complex molecule formation.

[a]Current address: Department of Chemistry, Emory University, Atlanta, GA 30322

[b]Friedel, D. N. & Snyder, L. E. 2008, ApJ, 672, 962