would raise the peak line temperature by a factor of 4, to 10 K. Thus, $\tau(^{12}C^{18}O)$ would be about 0.1 in this line and optical depth effects would not be very important.

## IMAGES OF STAR FORMING REGIONS IN CO AND $H_2$

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A collaboration between Nobeyama Radio Observatory and UKIRT has produced high resolution images in CO and $H_2$ of the star forming regions DR21, Orion, and M17. In each case the images in the two species are remarkably similar. This is a striking result, for the $H_2$ traces a very hot component of the interstellar medium, either shocked to temperatures around 2000 K or highly excited by ultraviolet fluorescence.

The velocity resolution of the CO data is ample to demonstrate the morphology and dynamics of the violent interaction between these H II regions and their parent molecular clouds. DR21 shows a large jet-like structure, the prominent ionization fronts of the Orion Nebula drive conspicuous shocks, and M17 has the expanding shell structure expected of a blister H II region.

## RELATION BETWEEN PHYSICAL ENVIRONMENT AND ITS CHEMISTRY IN ORION KL

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### 1. INTRODUCTION

Orion KL is a famous high-mass star forming region, and many investigations have studied its dynamical aspects. But the chemical aspects of Orion KL are still veiled. In this paper, from chemical and physical analysis, we show that there are differences in the chemistry among many "velocity elements" in the core of Orion KL.

### 2. OBSERVATIONS AND DATA

The observations were made using the 45-m telescope of Nobeyama Radio

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