In this talk, I will discuss some of the uses of high-resolution, infrared spectroscopy for the study of star formation regions. This will emphasize the use of molecular diagnostics to investigate gas in protoplanetary disks. As part of my research involves developing new instrumentation, I will discuss the current status EXES and MICH, instruments for, respectively, SOFIA (NASA's airborne observatory) and the Thirty Meter Telescope. I will describe how these projects represent significant advancements over previous capabilities.