# INFRARED SPECTROSCOPIC STUDIES OF THE PHYSICS AND CHEMISTRY OF STELLAR EVOLUTION WITH THE STRATOSPHERIC OBSERVATORY FOR INFRARED ASTRONOMY (SOFIA)

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The joint U.S. and German Stratospheric Observatory for Infrared Astronomy (SOFIA) will be a premier facility for studying the physics and chemistry of the stellar evolution process for many decades. SOFIA's first-generation instrument complement includes broadband imagers, moderate resolution spectrographs capable of resolving broad features due to dust and large molecules, and high resolution spectrometers suitable for kinematic studies of molecular and atomic gas lines at km/s resolution. SOFIA spectroscopic science applications will be discussed, with special emphasis on investigations related to infrared spectroscopy of astrophysical gas, grains, and ices. Examples will be given of imaging and spectroscopic studies of protostars, obscured sources in molecular cloud cores, circumstellar disks around young stellar objects, remnants of nova and supernova explosions, and winds of evolved stellar systems.