

ABSTRACT

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Ices, silicates, and gas in FU Orionis objects

FU Orionis objects (FUors) play a central role in the study of the evolution of young stars. They undergo accretion outbursts that can bring up to about 0.01 solar masses per outburst, therefore providing a significant amount of mass in the pre-main sequence life of a star. We have observed nine FUors with Spitzer IRS to detect and model the silicate and ice (e.g., carbon dioxide, water, etc) features and the gas emission lines (e.g., Ne II, H₂, Fe II). Previous Spitzer IRS observations of FUors have shown either silicate features in absorption and ice bands or silicates in emission with no ice bands. This led some authors to propose an evolutionary paradigm in which the former FUors are younger than the latter FUors. This paradigm suggests that the FUor phase may be the link between Class I and Class II sources and that might be a common but rarely observed phase of most young low-mass stars. Our sample of targets show similar features: some targets with deep silicate and ice features in absorption and others with silicates in emission and no ices. In addition gas emission lines are detected in some targets. We will present an analysis of the ice component in the Spitzer IRS spectra together with the silicate feature. We will compare our FUor targets with other known FUors and will place them into the evolutionary sequence from Class I to Class II stars.