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From Molecules to Dust (and back)

Wednesday 13 June 2018 09:00 (45 minutes)

Throughout the Universe, there is a close interplay between the formation, evolution and destruction of dust grains and molecules, driven by the diverse conditions encountered in various astrophysical environments. When stellar gas cools down in the surroundings of evolved stars, it starts a transformation into molecular gas and dust grains. The resulting inventory depends not only on the chemical makeup of the stellar photosphere, but also on the physical conditions and available timescales. Dense tori and disks can offer long timescales for chemistry and grain growth, while photo-processing by stellar and interstellar radiation further drives molecular chemistry and dust erosion as stellar outflows are dispersed into the interstellar medium. In interstellar environments, dust grains and large molecules can offer their surfaces to facilitate the formation of molecules, and a particularly rich molecular chemistry occurs in the ice mantles on dust grains in molecular clouds. Near hot stars, intense radiation fields create harsh conditions where UV photons destroy all but the fittest of molecular species.

In this talk, I will present an overview of the environments where molecules and dust reside, and the physical and chemical processes that affect them.

Consider for a poster?

Author: Prof. CAMI, Jan (University of Western Ontario)

Presenter: Prof. CAMI, Jan (University of Western Ontario)

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