



**CLARK UNIVERSITY
DEPARTMENT OF PHYSICS
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“An inventory of the stellar sources of dust in the Universe”

Abstract: Dust is a key ingredient in many astrophysical processes. It is the catalyst for the formation of molecular hydrogen, and allows efficient cooling of collapsing cores leading to the formation of stars. Information about the astrophysical processes responsible for its growth and formation is imprinted in the dust in the form of mineralogy. Unlike gas, therefore, dust retains a memory of these processes for timescales up to ~ 1 Gyr.

Dust is formed in the outflows of low-mass (1-8 solar masses) evolved stars and also in the explosions of massive (>8 solar masses) evolved stars. However, supernovae (SNe) reverse shocks also destroy significant amounts of dust. While the net contribution of dust from SNe is therefore highly uncertain, it is relatively easy to determine the total input from asymptotic giant branch (AGB) stars, which are numerous in present-day star-forming galaxies. Our group has identified AGB candidates in many nearby galaxies, and has used a grid of radiative transfer models to fit their spectral energy distributions in order to derive the total dust input to the interstellar medium (ISM). In this talk, I will summarise our findings and also advertise ongoing modelling and observational efforts related to dust in various environments as well as in AGB stars in the Solar Neighbourhood.

Friday, February 1, 2019

10:45 am - Room S-122, Sackler Sciences Center