Life Cycle of Dust

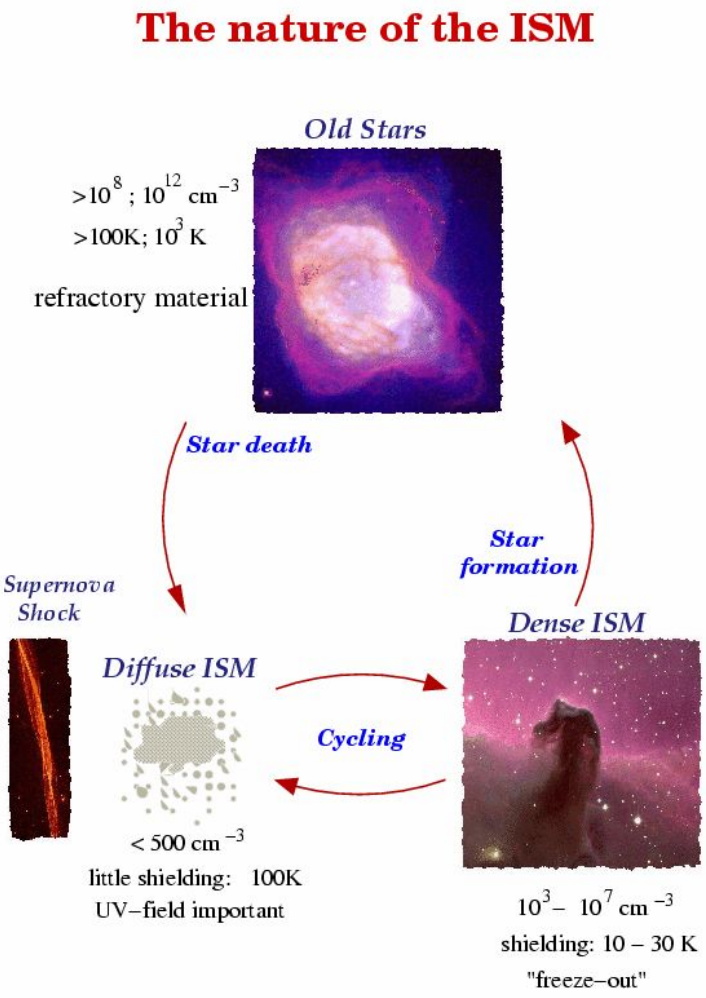
6th ICE summer school

3-13 July 2023

Ciska Kemper (ICE-CSIC / ICREA / IEEC)

Why study dust?

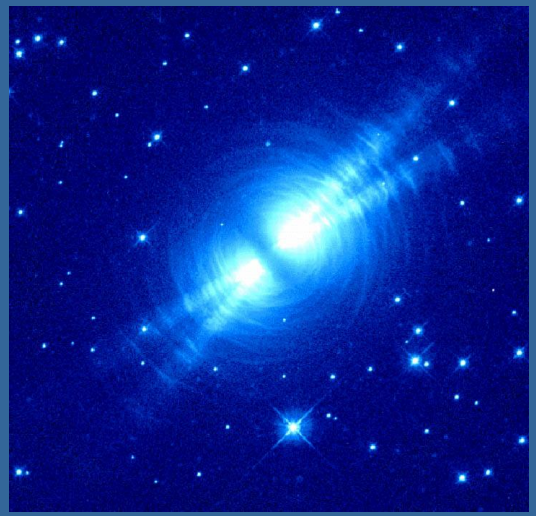
- 1% of mass, 30%-90% of luminosity
- Driver of galaxy evolution
- Formation of molecules: H_2
- Thermal balance: star formation
- Building blocks of planets

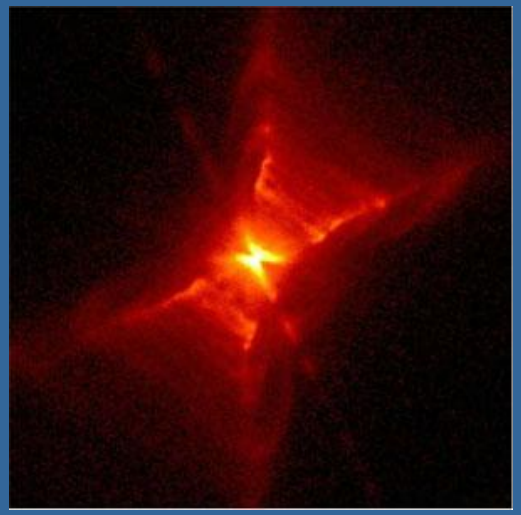


The life cycle of dust in galaxies

Old stars have young dust…

Dust formation: post-MS stars – AGB stars

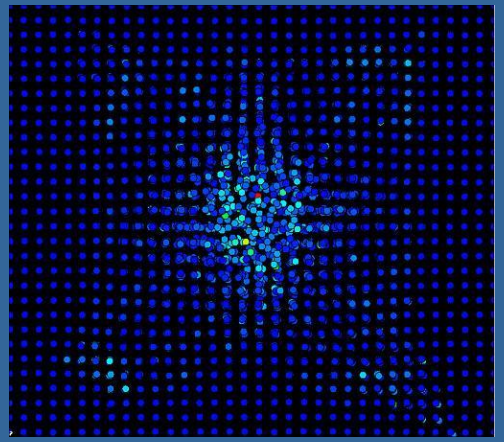




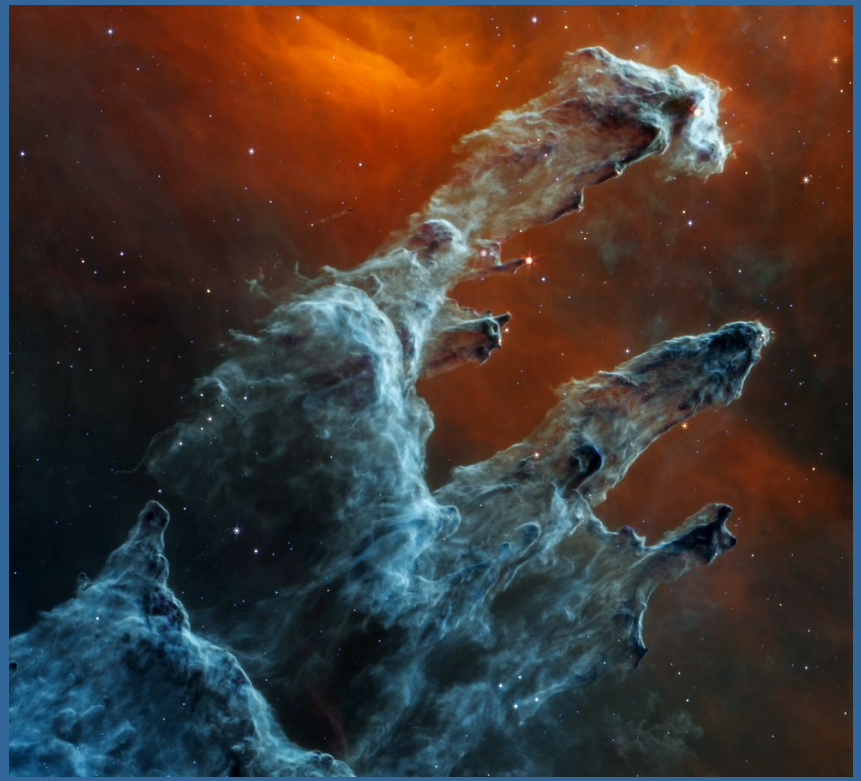
…mid-life in the ISM…

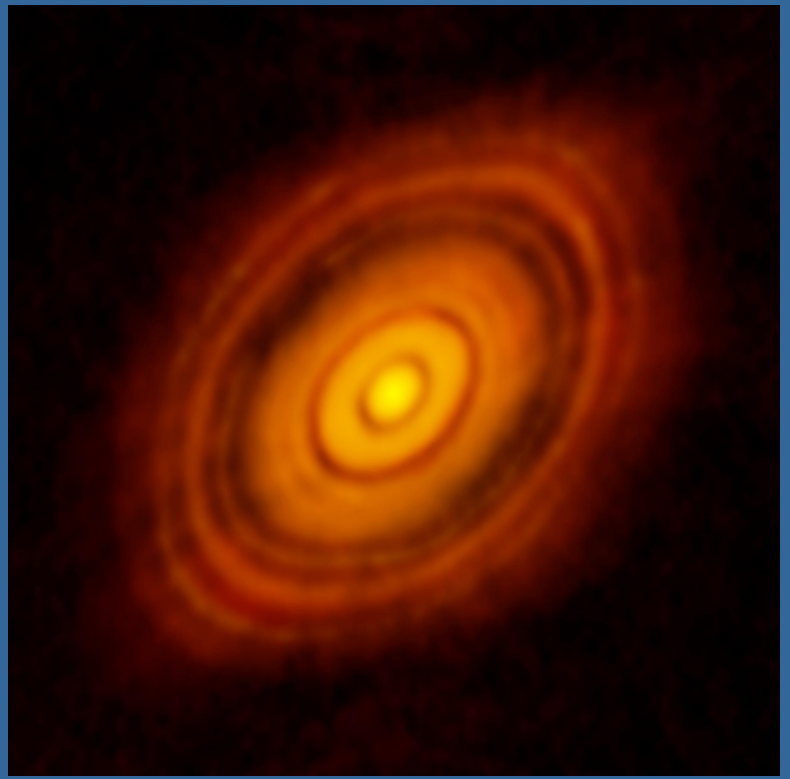
The ISM is violent: SN shocks, intense radiation field.

Dust properties are different. How do they trace the ISM conditions?



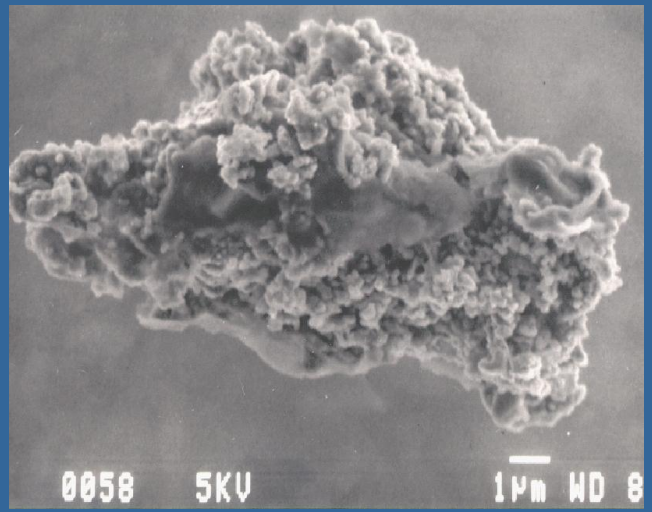
…and young stars have old dust

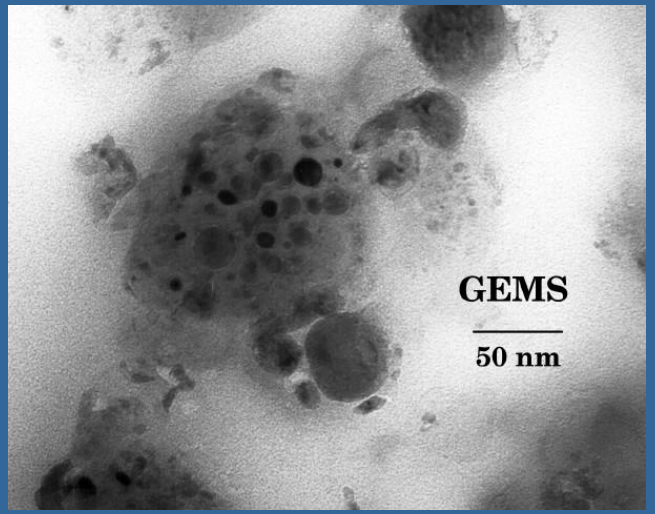




The solar system connection

Are Interplanetary Dust Particles the connection between ISM dust and the Solar System?





Programme

3 - 13 July 2023

9:00 - 9:45 & 10:00 - 10:45	Lecture 1
11:15 - 12:00 & 12:15 - 13:00	Lecture 2
Pause	
14:00 - 14:45 & 15:00 - 15:45	Lecture 3
16:15 - 17:00 & 17:15 - 18:00	Lecture 4

Summer school dinner: 5 July 2023

Excursion to ALBA synchrotron facility: 7 July 2023 (afternoon)

Scientific topics

Week 1: Interstellar dust and dust formation
Week 2: Dust in planetforming disks and planetary systems; and polarization

Mostly lectures, but with hands-on sessions on 4 July, 5 July and 11 July

Student talks

Friday 7 July 11:15 – 13:00

11:15	Florin Placinta - Useful tools for beginners and protoplanetary disks
11:30	Hamidreza Mahani - The Mass Loss Rate of Andromeda's Most Massive Satellites
11:45	Maialen Orte - Temperature relationships for Cl2+ ion and determination of ionic abundances
12:00	break
12:15	Elena Díaz - Radio observations of star-forming regions
12:30	Doğa Demir - Future Prospects in the Advancement of Supernova Explosion Studies: Early Detection, Multimessenger Astronomy, and Theoretical Modeling
12:45	Szanna Zsíros - Dust formation and circumstellar interaction in the environment of core-collapse supernovae

PhD positions at ICE

4 positions advertised with an application deadline of 7 July 2023
https://www.ice.csic.es/about-us/jobs

Understanding and quantifying crystalline silicate production by evolved stars
RL3, supervisor: F. Kemper