

Role of dust in galactic chemical evolution.

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Abstract

Abstract : Even though dust grains contribution to the mass of a galaxy is tiny, they play a huge role in its chemical evolution because they are the main mechanism of molecular hydrogen formation. Furthermore, dust grains shield the H₂ that constitutes star formation regions. Thus, its very critical to include the evolution of the dust in the models of chemical evolution. Therefore, we have created a one zone model of galactic chemical evolution of the Milky Way that includes the life cycle of the dust grains. In this life cycle we have included the creation in the AGB phase of low mass stars and SNe, their destruction via SN shock waves and their growth via accretion in the ISM. We have found that our model reproduces the observed dust to gas ratio, it overestimates it by just 0.08 dex. However, the model underestimates the metallicity of the ISM. We have found out that this underestimation occurs due to the high depletion of the metals inside the dust grains, the dust to metals ratio is 1 since early ages in the galaxy. This work has been partially supported by MINECO-FEDER-grants AYA2013-47742-C4-4-P, AYA2016-79724-C4-1-P and AYA2016-79724-C4-3-P. YA is supported by contract RyC-2011-09461 of the *Ramón y Cajal* programme.