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## The recent achievements of the RockStar Group of the Perugia University on astrophysical modeling and pallasite geochemistry.

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Here, we summarize the first achievements of the RockStar Group of the Department of Physics and Geology (at the University of Perugia, Italy). The group was created on the initiative of Maurizio Busso and consists of a close collaboration between Physicists and Geologists on astrophysical and planetological studies. Astrophysical modeling takes significant advantage of geochemical investigations on meteorites, since they store information about the early Solar System and its evolution. On the other hand, geochemical and structural studies of minerals, crystals, and quasi-crystals can provide the basis for modeling the formation and the physical evolution of meteorites and planetary bodies. In agreement with these premises, the RockStar Group acts on two research lines: (i) astrophysical modeling and (ii) mineralogical and geochemical studies of meteorites. With regard to astrophysical modeling, our recent studies focused on nucleosynthesis models and mixing processes in AGB stars. Latest models, that consider the activation of the  $^{13}\text{C}$  neutron source in AGB stars as a by-product of magnetically-induced mixing episodes, were shown to explain several observational constraints on s-processing. In particular, magnetic models for low-mass stars with close-to-solar metallicity can reproduce the peculiar isotopic ratios of trace heavy elements measured in presolar SiC coming from ancient AGB stars. Concerning meteorites, our recent studies focused on the Mineo pallasite, a unique sample hosted by the Meteorite Collection of University of Perugia. The new geochemical and mineralogical data constrain the Mineo meteorite among the Main Group Pallasites and support the hypothesis of the “early giant impact” formation.

### Session

Galactic Chemical Evolution

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