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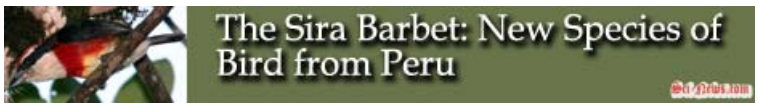

Chemistry of Exoplanet-Hosting Stars Provides New Insights int

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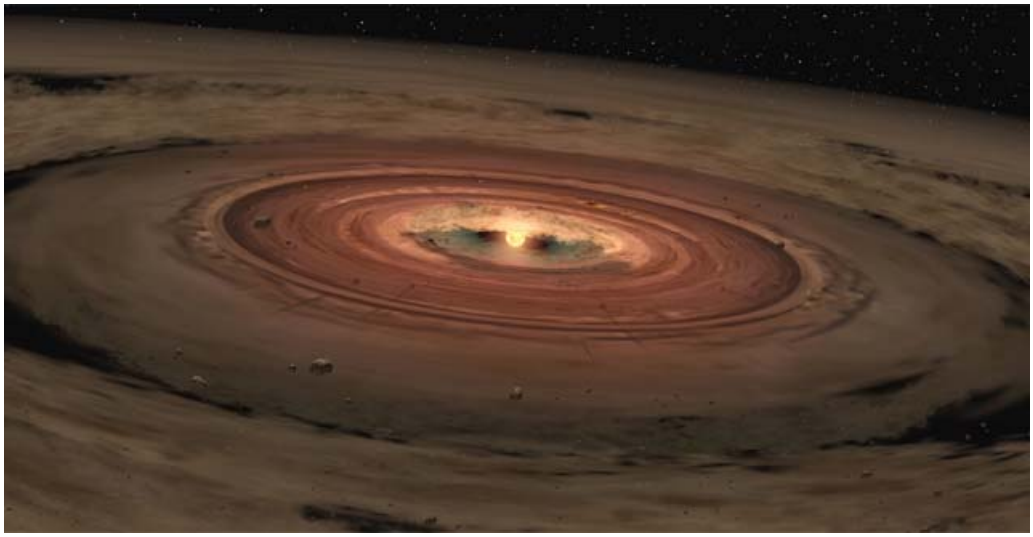
Chemistry of Exoplanet-Hosting Stars Provides New Insights into Planet Formation

A team of European astrophysicists led by Dr Vardan Adibekyan of the Centro de Astrofísica da Universidade do Porto, Portugal, has found that metals like magnesium may play a significant role in the formation of low mass planets.



An artist's concept of a star surrounded by a swirling disk of planet-building dust (NASA / JPL-Caltech / T. Pyle / SSC)

The team using ESO's HARPS spectrograph observed and analyzed spectra of 1111 Sun-like stars. 109 of these objects are known to harbor high mass Jupiter-like planets, and 26 have Neptune-like companions.

The researchers focused especially on studying the abundance of refractory elements in these stars, like magnesium, silicon or titanium, which make up the bulk of the mass of the terrestrial planets and a fraction of the mass of giant planets and their moons.

The results, published in the journal *Astronomy & Astrophysics* (arXiv.org version), show that the ratio of these elements, compared with the amount of iron, is consistently higher in stars with planets, with the greatest discrepancy observed for magnesium.

"These findings indicate that some metals other than iron are involved in the process of planet formation, especially when the amount of iron is lower than solar," said lead author Dr Vardan Adibekyan of the Centro de Astrofísica da Universidade do Porto.

"These results may provide strong constraints for the models of planet formation, especially for planets with low mass."

The leading theories of planet formation suggest that planets form by clumping smaller particles of heavy elements, into larger and larger bodies.

The new results reveal that planets need a minimum amount of 'metals' to be formed. The formation of planets, even the lowest mass ones, is dependent on the dust content of the cloud that gave origin to the star and planetary system.

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Bibliographic information: Adibekyan et al. 2012. Overabundance of alpha-elements in exoplanet-hosting stars. *Astronomy & Astrophysics*, vol. 543, article no. A89; doi: 10.1051/0004-6361/201219564

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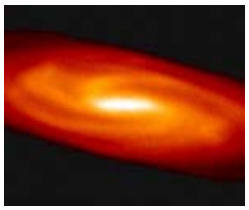

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