

Geowissenschaftliches Kolloquium

Geophysical isotope analyses and Earth's nitrogen budget

Donnerstag, 14. Juni 2018 - 16.15 Uhr

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It is shown that Venus and Earth formed within the solar nebula and accreted masses that could capture thin hydrogen envelopes that were lost during a few 10s of million years after the disk evaporated. A denser primordial hydrogen dominated atmosphere surrounded early Venus compared to a less massive proto-Earth, that accreted its final mass by pre-fractionated dry impactors and about 2% carbonaceous chondrites after the thin primordial hydrogen envelope was lost. This is also in agreement with Hf-W isotope chronometric evidence that favours a fast accretion scenario of the Earth with a late Moon-forming impact. The talk concludes with a discussion on the implications of these findings in relation to the further evolution of secondary nitrogen dominated atmospheres on terrestrial exoplanets and their potential habitability.

Dr. Lammer studied Geophysics at the University of Graz and works since the beginning of the 90s at the Space Research Institute of the Austrian Academy of Sciences. He participates in the space missions Mars Express and a particle experiment on Venus Express, as well as the BepiColombo flagship mission, the ESA mission to study the Jupiter system and its moons, JUICE and the exoplanet missions COROT, CHEOPS and PLATO. Besides, Dr. Lammer was involved in scientific advisory teams of the European Space Agency for solar system missions and for the discovery and characterization of Earth-like exoplanets.



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