

PRINT ONLY: EARLY SOLAR SYSTEM EVOLUTION AND PLANETARY FORMATION

Alibert Y. Mousis O.

Structure and Evolution of the Saturn's Subnebula — Implications for the Formation of Titan [#1141]

We calculate the structure and the evolution of the Saturn's subnebula, in a way consistent with the formation process of the planet, by using a two-dimensional evolutionary turbulent alpha-model. We also discuss the implications for the formation of Titan in the subnebula.

Canup R. M. Pierazzo E.

Retention of Water During Planet-Scale Collisions [#2146]

Results of SPH simulations of impacts between large, ice-rich impactors and an Earth-like planet are presented, in particular the predicted fraction of water retained as a function of impact velocity and angle.

Gusev A. V. Petrova N. K.

Normal Modes in Rotation of the Earth-like Planets [#1669]

For a planet with a solid inner core and a liquid outer core, there are four rotational normal modes. This number is reduced to two for a planet without inner core, and to one for a planet without liquid core.

Holin I. V.

Earth-based OREPS to Measure Variations in Planetary Spin [#1118]

The synthesis and analysis of the OREPS approach is described to measure variations in planetary spin vectors.

Horner J. Mousis O. Hersant F.

Deuterium and Cometary Reservoirs [#1041]

Using a deuterium-enrichment profile, which offers a relationship between the D:H ratio incorporated in grains and their formation place in the nebula, we examine the possible effect that formation in different regions could have on the values of this ratio observed in comets today.

Kortenkamp S. Weidenschilling S. J. Marzari F.

Perturbed Planet Formation: Accounting for Massive Companions in Simulations of Planetesimal Growth [#2034]

We study planet formation in perturbed systems where planetesimal growth occurs under the influence of massive companions, either additional stars (e.g., Gamma Cephei) or pre-existing giant planets (e.g., Jupiter and Saturn in our own solar system).

Mousis O. Alibert Y. Sekine Y. Sugita S. Matsui T.

Fischer-Tropsch Catalysis in a Turbulent Model of the Jovian Subnebula [#1139]

We examine the production of methane through the Fischer-Tropsch catalysis in the Jovian subnebula and its implications for the composition of produced planetesimals by using an evolutionary turbulent accretion disk model.

Pauzat F. Ellinger Y. Mousis O.

Sequestration of Noble Gases by H_3^+ in the Outer Solar Nebula — Implications for the Formation of Comets [#1331]

We discuss the implications of the production of stable complexes formed by H_3^+ and noble gases in the gas-phase for the formation of comets in the outer solar nebula.

Petit J.-M. Mousis O. Alibert Y. Horner J.

Photophoresis as a Source of Crystalline Silicates in Comets [#1558]

We show that photophoresis is an efficient transport mechanism that allows crystalline silicates formed in the inner nebula to move outward in the formation regions of comets. This mechanism is found consistent with the heterogeneity of crystalline silicates abundances observed in comets.

Rushmer T. Petford N. Humayun M.

Can Deformation Induced Core-Mantle Interaction Account for the "Late Veneer"? [#1936]

Results from our model of shear-enhanced dilatancy and return flow suggest that at least some of the "late veneer" component in the present day Earth could be internal in origin, but triggered by external impacts.

Sahijpal S.

Numerical Simulations of the Planetary Differentiation of Planetesimals [#1688]

Numerical simulations of the planetary differentiation of planetesimals with ^{26}Al and ^{60}Fe as the heat sources have been carried out.

Ustinova G. K.

The Key Role of the Type Ia Supernova in Origin of the Solar System [#1070]

Injection of the iron enriched matter of the Type Ia Supernova into the protosolar nebula has created the initial large-scale chemical heterogeneity of the accreting matter, which in conditions of the supersonic turbulence has resulted in the initial metal-silicate separation of the matter.

Vityazev A. V. Bashkirov A. G. Pechernikova G. V.

Gravito-MHD of Gas-Dust Disk Near Young Sun: Dissipative Stage [#1860]

Layered models of post-accretion disk are investigated where an accumulation of bodies occurs. At the same time, a turbulent outward transport of an angular momentum and gas to the periphery of the disk is accounted in the MHD-active upper layer.

Ward Wm. R. Canup R. M.

Tidal Interactions Between a Planet and a Circumplanetary Disk [#2169]

The tidal interaction between a planet and a circumplanetary disk with spiral wave structures is considered. The process can deposit angular momentum from the planet's rotation into the disk, inhibiting inward diffusion and increasing the fraction of material available for satellite formation.