

Meteorites: Space-Time Messengers of the Solar System

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Meteorites are extra-terrestrial chunks falling on the Earth's surface due to the gravitational perturbations created in the asteroid belt situated between orbits of Mars and Jupiter. Asteroidal region has acted as a reservoir for >9,30,000 (> 10 meters' size) asteroids for billions of years. Representative remnant samples of event and processes of formation of first Solar System solids to planet are found in different types of asteroids and thus are very important archive of materials documenting various stages of the formation of our Solar System.

Studying meteorites (chondritic, achondrites, differentiated iron meteorites) originating from these asteroids provide very useful information regarding the critical and crucial first hundred-million-year history. The major epochs of planetary formation and evolution; 1. Formation of 1st solids from presolar grains and proto-solar molecular cloud; 2. Agglomeration & accretion of gas, dust, organics and solids into pebbles and boulders, 3. Formation planetesimals and planets by collisional accretion, runaway growth; 4. Differentiation and metamorphism (thermal evolution) of formed proto-planets and planets. Cosmo-chemical evolution and their timescales can be inferred by studying different components of these meteorites.