

## Callisto as a keystone to reproduce the formation process of the Jovian system

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Callisto is the outermost Galilean satellite, with 2410 km of radius and 1.83 g/cc of density. The size and mass are comparable to those of another Jovian moon, Ganymede and the largest moon of Saturn, Titan. Unlike Ganymede and Titan, however, heavily-cratered Callisto may have experienced only limited geological activities since its formation. Owing to the low geological activities, Callisto may serve as a “fossil” of the Jovian system formation in the early Solar System. Volatile and isotope compositions of ice materials on Callisto would reflect ice compositions of the building materials of the Jovian satellites, which is critical to constrain the disk temperature of the formation region of proto-Jupiter as well as both shock heating and size of infalling materials onto proto-Jupiter. The interior structure, namely degree of differentiation, of Callisto is essential to constrain the inflow rate of the building materials from the protoplanetary disk. In this talk, we discuss the key observations, e.g., surface materials and interior structure of Callisto, in future missions to constrain the formation process of the Jovian system.

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