

[☞SS-09] The Solar Nebular on Fire: A Solution to the Carbon Deficit in the Inner Solar System

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Despite a surface dominated by carbon-based life, the bulk composition of the Earth is dramatically carbon poor when compared to the material available at formation. Bulk carbon deficiency extends into the asteroid belt representing a fossil record of the conditions under which planets are born. The initial steps of planet formation involve the growth of primitive sub-micron silicate and carbon grains in the Solar Nebula. We present a solution wherein primordial carbon grains are preferentially destroyed by oxygen atoms ignited by heating due to stellar accretion at radii < 5 AU. This solution can account for the bulk carbon deficiency in the Earth and meteorites, the compositional gradient within the asteroid belt, and for growing evidence for similar carbon deficiency in rocks surrounding other stars.

[☞SS-10] Far-ultraviolet Observations of the Comet C/2001 Q4 (NEAT)

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We present far-ultraviolet (FUV) observations of comet C/2001 Q4 (NEAT) obtained with Far-ultraviolet Imaging Spectrograph (FIMS, also called SPEAR) around perihelion between 8 and 15 May 2004. Several important emission lines, including S I (1425, 1474 Å), C I (1561, 1657 Å), CO (1087.9, 1340–1680 Å) were detected. Especially, the spectral features of CO are its electronic transitions belonging to the A-X, C-X systems. We also obtained radial profile of S I, C I, H I Ly β with line fitting from central coma. The production rate of several spectral lines calculated from observed FUV photon flux. FUV spectral images of S I, C I, H I Ly β emission lines were obtained.