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Functional chemistry and isotopic composition of organics within the pristine chondrite Maribo.

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The functional chemistry and isotopic compositions of organic matter (OM) within carbonaceous chondrites allow to study nebular and parent body processes in the early Solar System [e.g., 1]. The CM chondrite Maribo is relatively unaltered and contains pristine organics [e.g., 2]. A minor fraction of Maribo OM shows ^{15}N -depleted isotopic compositions ($\delta^{15}\text{N}_{\text{air}} \sim -200\%$) occurring as submicron organic aggregates dispersed within the matrix. Their functional chemistry obtained by TEM-EELS and synchrotron-STXM shows typical signatures of extraterrestrial OM with varying intensity on the nm scale. In contrast to OM in CRs, which often exhibits a globular texture likely due to fluid reactions, this morphological and chemical small-scale variability attests to the pristine nature of the Maribo OM. This is supported by analyses on extracted bulk material [2].

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[1] Vollmer C. et al. (2019), *MAPS*, doi: 10.1111/maps.13389. [2] Haack H. et al. (2012) *MAPS* **47**(1):30-50.

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