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Ca,Al-rich inclusions within the unique CM-chondrite NWA 11024

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The meteorite NWA 11024 is classified as CM-an [1] based on the lack of hydrous phases and is therefore of special interest. Here, we report on the mineralogy of Ca,Al-rich inclusions (CAIs) from two thin sections [2,3].

A total of 82 CAIs have been found resulting in a modal abundance of 1.1 vol% [2,3]. Most CAIs are small (<100 µm; the largest has an apparent size of 490 µm) and belong to the fine-grained, “fluffy”, spinel- and pyroxene-rich inclusions. Most other inclusions are “simple” CAIs and rare fine-grained aggregates exist. The “fluffy” CAIs often show a contorted/sinuuous morphology, while the “simple” CAIs typically have a simple core-rim structure. The most common phases are spinel, different Ca-pyroxens (diopside, Al-diopside, fassaite) and olivine. Rare phases of the inclusions include perovskite, hibonite and a PGE-nugget. The results are in agreement with CAIs of other CM-chondrites.

[1] <https://www.lpi.usra.edu/meteor/metbull.php>. Meteoritical Bulletin Database. [2] Lentfort S. (2016) Bachelor Thesis, WWU Münster, 1-66. [3] Kimpel S. (2016)

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