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Ni isotope composition of zoned metal grains in CB_b chondrite Hammadah al Hamra 237

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CB_b chondrites are characterized by uncommonly high metal contents (~60 vol%), bulk compositions enriched in siderophile element abundances (~4-10 x CI [1]), and some metal grains that are chemically zoned. These features in combination with the finding of isotopic zonation of Fe in chemically zoned metal grains [2,3] indicate formation via a condensation process, either in the solar nebula or in an impact-induced vapor plume [1].

This study reports Fe and Ni isotope compositions of zoned metal grains from the CB_b chondrite Hammadah al Hamra 237, analysed *in situ* with femtosecond LA-ICP-MS. Fe and Ni isotope composition are positively correlated and lighter in cores than at rims (e.g., $\delta^{62/60}$Ni: -7.6 ± 0.2 ‰ vs -4.9 ± 0.2 ‰) and opposite to the zonation of refractory metal [2,3, this study]. This is consistent with a condensation origin for zoned metal grains. Coupled diffusion of Fe and Ni would produce negatively correlated isotope zonation patterns.

[1] Campbell, A.J. et al. (2002) GCA 66, 647-660. [2] Zipfel, J. & Weyer, S. (2007) LPSC #1927. [3] Fedkin, A.V. et al. (2015) LPSC #1038.

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