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Noble gases and radionuclides in Washington County iron meteorite.

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The Washington County iron meteorite is unique in that it contains solar-type noble gases (He and Ne). We report additional noble gas analyses, supplemented by radionuclide data obtained at ANU (Canberra) and VERA (Univ. Vienna). Activities in dpm/kg measured on two specimens taken close to those analyzed for noble gases are: 5.15/5.40 (^{10}Be); 3.46/2.66 (^{26}Al); 23.7/22.2 (^{36}Cl); 425/448 (^{53}Mn). ^{60}Fe is 1.09/1.29 dpm/kg Ni. Both cosmogenic noble gases and radionuclides indicate a preatmospheric radius of at most 15 cm. The ^{36}Cl - ^{36}Ar cosmic ray exposure age of ~120 Ma agrees well with that of [1] based on noble gases only and is in disagreement with the much longer age (575 Ma) obtained by [2] using the $^{41}\text{K}/^{40}\text{K}$ method. The new noble gas data further confirm that the solar noble gases are volume-correlated, an inference being that the Earth's iron core may constitute a potential source reservoir for the solar-type Ne observed in terrestrial mantle materials.

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[1] Vogt, M. (2018), PhD Diss., Univ. Heidelberg. [2]

Voshage, H. (1967) Z. Naturforsch 22a, 477–506.

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