that the apatites are likely recording the D/H of a crustal assimilant in isotopic equilibrium with Martian atmospheric water, and the apatites can be used to discern the evolution of D/H of atmospheric water. Our analyses of chlorapatite in ALH84001 suggest that the Martian atmospheric D/H was ~+3000 either 4.5 or 3.9 Ga depending on whether the chlorapatite is recording the D/H during igneous crystallization or a resetting of D/H during the shock event(s) at 3.9 Ga. We conclude that the majority of Martian water was lost during early hydrodynamic escape, and that atmospheric δD has only increased by ~1500‰ in the last 4 Ga, probably by Jeans escape.

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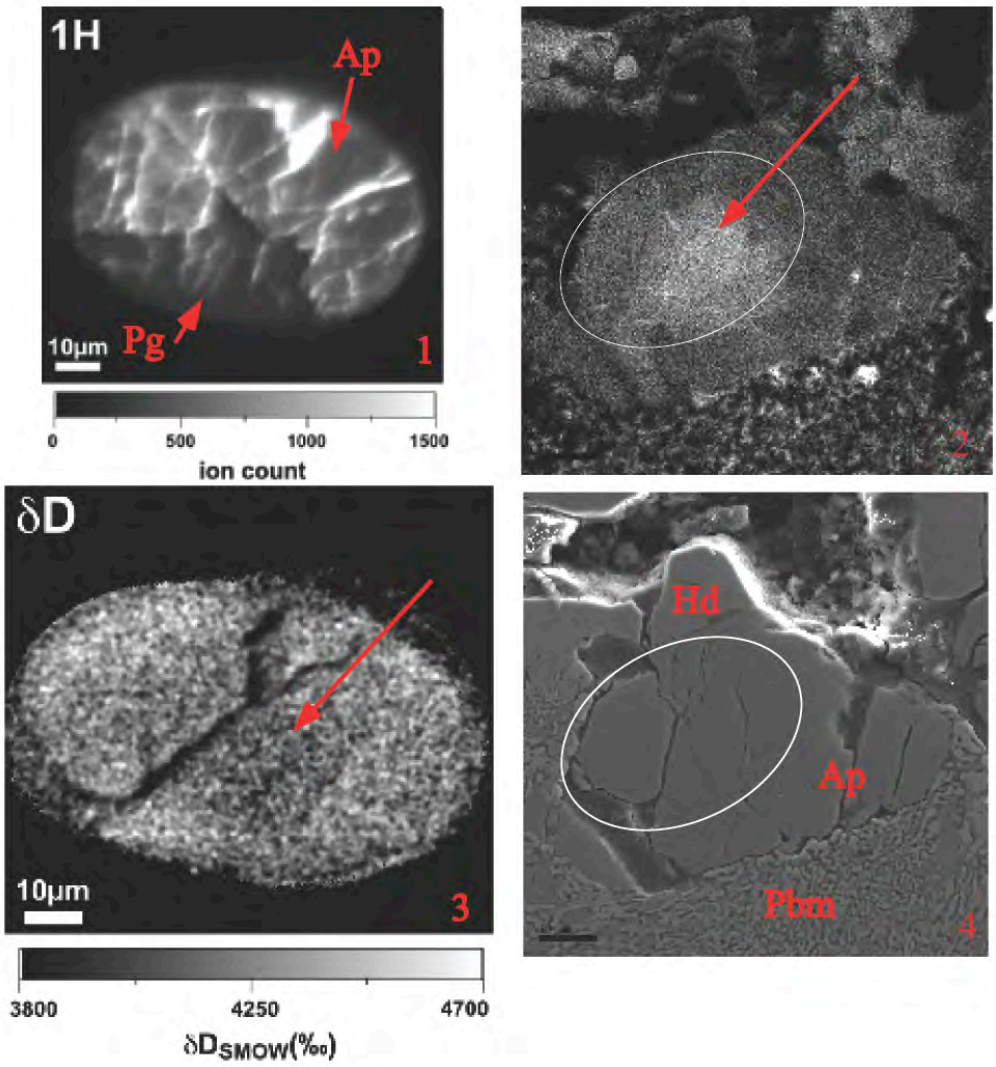

Figures. (1) ^{1}H image of shergotty apatite and K-,Si-rich glass (apatite is top grain). (2) CL image of 748-4 showing high CL (F-rich) core. Also shown are the SCAPS spot (ellipse). (3) δD image of 748-4 w/ arrow pointing to lower δD core. (4) SE image of 748-4 apatite. Scale bar is 20 µm. Ap= apatite; Hd=hedenbergite; Pbm: pyroxferroite breakdown material.