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Electronic Stopping Powers of 80-350 keV ^{19}F Ions in Ta, Nb, Mo, Ti Refractory Metals and $Ni_{0.8}Fe_{0.2}$ Alloy

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Electronic stopping powers of 80-350 keV ^{19}F in Ta, Nb, Mo, Ti refractory metals and $Ni_{0.8}Fe_{0.2}$ alloy were obtained by range measurement. Depth profiles of ^{19}F in these materials were measured by $^{19}F(p,\alpha\gamma)^{16}O$ resonant nuclear reaction. A proper deconvolution program was used to extract the depth distribution parameters from the experimental excitation yield curves. The total stopping powers were determined by forcing a fit between the experimentally determined projected range and that calculated with TRIM program. After subtracting calculated nuclear stopping cross sections, the electronic stopping cross sections were obtained. The results measured in this work were compared with those derived by using the Brand-Kitagawa theory.