Technetium (Z=43) has no stable isotope but it is observed in stars where active nucleosynthesis occurs. The p-process nuclide $^{97}\text{Tc}$ decays to $^{97}\text{Mo}$ by electron capture with a mean life of 3.7 Ma. This nuclide may have been present in the early solar system when planets, asteroids, and comets formed and differentiated. Identification of now extinct $^{97}\text{Tc}$ in its decay product $^{97}\text{Mo}$ would have profound implications for our understanding of the early solar system evolution.

As in the case of $^{182}\text{Hf}/^{182}\text{W}$, metal-silicate partitioning gives rise to a large fractionation of the $^{97}\text{Mo}/^{185}\text{Re}(^{97}\text{Tc})$ ratio because molybdenum is moderately siderophile while rhenium (and by inference technetium) is highly siderophile. Thus, if there was live $^{97}\text{Tc}$ when the terrestrial core formed, there would be a $^{97}\text{Mo}$ deficit in terrestrial rocks relative to iron meteorites and chondrites. Yin and Jacobsen (1998) succeeded in resolving excess $^{97}\text{Mo}$ in the Toluca iron meteorite ($\varepsilon^{97}\text{Mo}=0.64\pm0.24$). This finding implied that the time elapsed between the last nucleosynthetic production of $^{97}\text{Tc}$ in supernovae and terrestrial core formation was lower than 19-24Ma. On the contrary, Lee and Halliday (1995) estimated from tungsten isotopic measurements that, in the case of a two stage model, terrestrial core formation must have occurred at least 62±10Ma after the iron meteorites formed. Yin and Jacobsen (1998) suggested that continuous core formation might clear up the discrepancy between $^{182}\text{Hf}/^{182}\text{W}$ and $^{97}\text{Tc}/^{97}\text{Mo}$ systematics. Nevertheless, if one takes into account the dilution by interstellar medium of supernovae ejecta as well as the time elapsed between the last nucleosynthetic event and the formation of iron meteorites, then tungsten and molybdenum data appear irreconcilable. In an effort to resolve the discrepancy between $^{182}\text{Hf}/^{182}\text{W}$ and $^{97}\text{Tc}/^{97}\text{Mo}$ systematics, we have documented the molybdenum isotopic composition of terrestrial rocks and iron meteorites. The results we obtained must be seen as preliminary. Our interpretations might evolve in the future when additional data become available.

Figure 1: $\varepsilon_{\text{Mo}}$ is defined as
\[ \left[ \frac{\text{Mo}_{\text{sample}}}{\text{Mo}_{\text{standard}}} \right] - 1 \times 10^4. \]


