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## Noble gases for micrometeorites (MMs) from the Transantarctic Mountains (TAM) with results indicating multiple populations.

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We present results of our noble gas study from (so far) 22 MM aliqouts of the PNRA-TAM collection (MM sizes  $> 400\mu m$ ) [1]. Four cosmic spherules (CS), 6 scoriaceous (Sc) and 12 unmelted (Un) MMs have been measured. To analyze our samples we used our Noblesse (Nu Instruments) mass spectrometer with multi ion detection. Initial results have been reported in [2]. <u>Neon:</u> Most of the Sc and UnMMs have higher  $^{20}$ Ne $^{/22}$ Ne (~5-12.5) and  $^{21}$ Ne/ $^{22}$ Ne (0.033-0.558) ratios compared to air. This indicates the presence of solar + spallogenic Ne. <u>Argon:</u> Almost all of the measured Un and ScMMs show  $^{40}$ Ar/ $^{36}$ Ar ratios distinctly lower than air: 2.3-260. Xenon: Some MMs appear to have lost their original trapped Xe and acquired mass fractionated air Xe instead (by ~1%/amu). One UnMM resembles in its Xe isotopic composition primitive meteorites, another in its <sup>21</sup>Ne, <sup>38</sup>Ar and Xe an achondrite. [1] Rochette P. et al. (2008) PNRA 105, 18206-18211. [2]

Baecker B. et al. (2003) 14KA 105, 18205-18211. [2] Baecker B. et al. (2012) 43rd LPSC (abs. #1824). Acknowledgments: Support by DFG through SPP 1385 (Project OT 171/5-1) and PNRA (Programma Nazionale delle Ricerche in Antartide, Italy).

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