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# SOLAR FLARE NEON AND SOLAR COSMIC RAY FLUXES IN THE PAST USING GAS-RICH METEORITES

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~~We have~~ earlier were developed (Venkatesan et al., 1980 and Nautiyal et al., 1981) methods to deduce the composition of solar flare neon and to determine the solar cosmic ray proton fluxes in the past using etched lunar samples and at present, ~~we are extending~~ these techniques are extended to gas-rich meteorites.

~~We have determined~~ noble gas elemental and isotopic composition in gas-rich meteorites, Weston, Elm creek, Leighton and Pantar by step-wise gas-release procedures. By combining these results with the existing data on Fayetteville and Kapoeta (Black, 1972 and Manuel, 1969) we find that Ne data points at low temperatures (<600°-800°C) fall along the tie-line joining the contemporary SW-Ne end point (20/22 = 13.6) with the SF-Ne end point (20/22 = 11.7±0.3). Further we find a similar behaviour in case of selected lunar samples. The Ne observed in low temperature fractions seems to be varying mixtures of SW and SF components. Our results suggest that the composition of implanted SF-Ne in gas-rich meteorites is close to 11.7±0.3 which is consistant with the values deduced earlier using etched lunar mineral separates (Nautiyal et al. 1981; Wieler et al., 1982).

By considering high temperature (>600°-800°C) Ne data points for Pantar, Fayetteville and other gas-rich meteorites and by applying the three component Ne-decomposition methods, we could resolve the SCR and GCR produced spallation Ne components from the trapped SF-Ne. Using appropriate SCR and GCR production rates, in the case of Pantar, for example, we estimate a GCR exposure age of 2 m.y. for Pantar-Dark while Pantar-Light yielded a GCR age of ~3 m.y. However the SCR exposure age of Pantar-Dark is two orders of magnitude higher than the average surface exposure ages of lunar soils. The possibility of higher proton fluxes in the past is discussed.

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