

ABUNDANCES IN EVOLVED INTERMEDIATE MASS STARS

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A sample of 285 galactic Planetary Nebulae (PNe) well studied up to 1995 has been examined to improve our knowledge on Galactocentric Chemical Gradients (GCG) and chemical enrichment of the Interstellar Medium (ISM). The sample has been subdivided following Peimbert (1978). We have examined the vertical gradients of PNe within a cylinder normal to the galactic plane with axis on the Sun and radius of 2 kpc. Excluding PNe of type *IV* we don't see vertical gradients. The spread of $\log(O/H)$ near the galactic plane for type *II* PNe is of 0.7 dex. This is larger than the maximum uncertainty of the individual determination of the abundance of oxygen, estimated to be of $\pm 50\%$ (± 0.18 dex). This supports the existence of chemical inhomogeneities in the ISM in the last $0.5 \div 5$ Gyr. The above allows to look for GCG projected on the galactic plane. For PNe of type *II*, GCG in usual units amount to $+0.002 \pm 0.02$, $+0.024 \pm 0.03$, -0.075 ± 0.15 , -0.027 ± 0.07 , -0.044 ± 0.10 , -0.011 ± 0.15 , -0.067 ± 0.10 for He, C, N, O, Ne, S, Ar respectively. The corresponding values from Faundez-Abans & Maciel (1987) are -0.019 ± 0.024 , -0.069 ± 0.017 , -0.072 ± 0.24 , -0.072 ± 0.10 , -0.056 ± 0.15 , -0.098 ± 0.18 , -0.056 ± 0.15 . Note that our gradient for oxygen is quite different but within the uncertainties. We estimate the ISM chemical enrichment from PNe (Tinsley, 1978). For type *I* PNe we find: $He(PN)/He_{\odot} = 1.4$, $N(PN)/N_{\odot} = 4.1$. The relative mass return to the ISM from PNe comes out to be four times larger than from type *II* SN, with a possible uncertainty of a factor $2 \div 3$.

References

- Faundez-Abans, M. and Maciel W.J. (1987) *Astrophys. Spa. Sci.* 129, 353
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Tinsley, B.M. (1978) *IAU Symp. 76: Planetary Nebulae*, ed. Y. Terzian, p. 341