

CNO OVERABUNDANCES IN 6 STARS OF ω CENTAURI

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1. Introduction

C₂ and CN bandheads in the wavelength region $\lambda\lambda$ 550-680 nm are synthesized for 6 stars of ω Centauri, in order to derive their carbon and nitrogen abundances. Oxygen abundances are also derived taking into account molecular associations with C and N compounded molecules, using the appropriate C and N abundances.

These determinations have been made for CO-rich and CO-normal stars according to the CO indices measured by Persson et al. (1980).

High resolution spectra were obtained at the 3.6m telescope of the *European Southern Observatory* (Chile), using a CCD and the Caspec spectrograph.

We derive CNO abundances for 2 CO-rich and 3 CO-normal stars. The star ROA 65 was not classified by Persson et al. The detailed analysis of these 6 stars were previously carried out by François et al. (1988).

The results for the CO-normal stars ROA (65), 74, 91, 256, reveal that they all show similar CNO excesses: $[C/Fe] \approx +0.25$, $[N/Fe] \approx +0.5$, $[O/Fe] \approx +0.15$. These lower metal-abundance stars have a surprisingly high carbon abundance, suggesting that the initial C abundance was high.

As concerns the two "CO-rich" studied stars ROA 139 and ROA 270, they show very different CNO abundances: ROA 139 is C-poor and O-poor, and seems to show CNO abundances similar to O-poor stars in M13. ROA 270 shows the highest C abundance of our sample ($[C/Fe] = +0.65$) and it is also the richest in O ($[O/Fe] = +0.75$). These very high C and O abundances should reflect an initial overabundance in the gas from where it formed.

We conclude that the CO-normal stars have homogeneous CNO abundances, and the CO-rich stars show a pronounced variation, which might be interpreted as a self-enrichment or self-pollution, concerning at least the possibly second generation of stars (the more metal-rich) of ω Centauri.

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Persson, S.E., Frogel, J.A., Cohen, J.G., Aaronson, M., Mathews, K.:
1980, *ApJ* 235, 452