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# Carbon, Nitrogen and Oxygen to probe the chemical enrichment in early Galaxy

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## Abstract

CEMP stars are the big subset of metal poor stars which comes in different varieties based on the presence or absence of neutron capture elements in their spectra. Their origin can be understood based on the CNO abundances in them. CNO in CEMP-s stars comes from its AGB companion, whereas CNO in CEMP-no come from winds of spinars or faint supernovae. Oxygen plays an important role in distinguishing this scenario. However, obtaining oxygen abundances is very time consuming and difficult in CEMP stars due to the weak 6300 [OI] line and crowded C2 and CN lines in cool-CEMP stars that requires high resolution, high S/N optical spectra. Hence, we use NIR CO rovibrational bands in the NIR region, to derive oxygen abundances. For a carbon enhanced star the CO lines are sensitive to change in oxygen abundances. We also derived C,N,O abundances from optical wavelengths to calibrate the O abundances from NIR CO lines for a subset of CEMP stars. Here, we report CNO measurements of 10 CEMP stars from high resolution optical spectra and low resolution NIR spectra and compare them. This is the first time such comparison of CNO abundance over optical and NIR wavelength done in CEMP stars.

**Keywords:** AGB, low mass, metal poor, carbon enhancement, CEMP, s

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