

## Measurements of Oxygen in Carbon-Enhanced Stars

JINA scientists and their international colleagues are using the new SOAR 4.1m telescope in Chile, along with the OSIRIS near-infrared spectrograph, in order to make measurements of the abundance of the important elements C and O in the atmospheres of ancient, metal-poor stars.

Carbon, Nitrogen, and Oxygen are among the most basic elements required in order for life to exist. Hence, the identification and measurement of C, N, and O in old stars helps elucidate the picture of how the Universe created the conditions for life to emerge.

Estimates of the C and N abundances can often be obtained from observations in the optical region using moderate-sized telescopes, but O measurements in the optical usually requires 8m-10m class telescopes. By observing in the near-infrared with SOAR/OSIRIS, the abundance of O can be inferred due to its influence on the strong CO molecular bands that are visible in this portion of the spectrum.

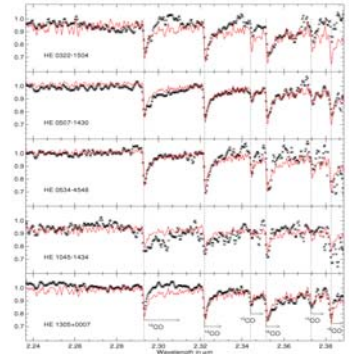
Timothy Beers (Professor of Astronomy at MSU), and his JINA-supported post-doctoral fellow Sivarani Thirupathi, and JINA-supported graduate students Young Sun Lee and Brian Marsteller, and their other colleagues, present these results in a paper to appear in the March issue of The Astronomical Journal. This study reveals that the ration of O relative to Fe in these stars is over 10 times the solar value.

### Publications:

See the preprint -- <http://arxiv.org/abs/astro-ph/0611827>

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Near-infrared medium-resolution spectra of very metal-poor stars obtained with the SOAR 4.1m telescope. All of these stars have heavy element abundances less than 1% of the solar value. The strength of the CO bands can be modeled in order to estimate the abundance of O.

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