Contribution ID: **109** Type: **Poster**

Low-mass carbon-enhanced metal-poor thermally pulsing AGB star HD112869

Monday 9 June 2025 18:30 (5 minutes)

Some regimes of AGB evolution have not yet been studied in sufficient detail. These include the AGB stars with extremely low metallicity. This poster presents the results of contemporaneous radial velocity monitoring, broadband BVR photometry, and high-resolution spectroscopy for metal-poor star HD112869. The radial-velocity monitoring shows semiregular variations with a peak-to-peak amplitude of about 10 km/s and a dominating period of ~ 114.9 days. The velocity variations are accompanied by light and colour variations those are shifted in phase relative to the velocity curve. The reason for the velocity, light, and colour variations is obviously the pulsations in the atmosphere of HD112869. The iron abundance was found to be low in the atmosphere of HD112869, [Fe/H] = -2.3 ± 0.2 dex, on the basis of ionized lines that are almost free from NLTE effects. The carbon abundance was found to be high, log ε (C) = 8.3 ± 0.1 dex. With the adopted oxygen abundance, [O/Fe] = +0.8 dex, the carbon to-oxygen ratio was found to be very high, C/O ~ 12.6. The isotopic lines of C 2 and CN molecules are too weak to be detected in the crowded spectrum, and the lower limit of isotopic ratio was found to be extremely high, 12 C/ 13 C > 1500. The s-process elements Sr, Y, and Ba are not enhanced significantly. However, the Nd, La, Sm abundance seems to be enhanced relative to iron. The upper limit for the r-process element Eu was set, [Eu/Fe] ≤ +0.8 dex. A carbon-to-oxygen ratio above 1, a high luminosity, and pulsation instability are typical features of cool evolved AGB and post-AGB stars. During thermal pulses the photospheric C/O ratio can exceed 10. According to the current data, HD112869 seems to be a single metal-poor low-mass TP-AGB star.

Author: GRANKINA, Aija

Presenter: GRANKINA, Aija