

PECULIARITIES OF ENRICHMENTS WITH CHEMICAL ELEMENTS OF METALS-POOR STARS

***T. V. Mishenina¹, I.A. Usenko², A. Yu. Kniazev³, V.V. Kovtyukh¹
& M.O. Kalyuzhny²***

¹Astronomical Observatory, Odessa National University, 65014, Odessa, Ukraine, tmishenina@ukr.net

²Mykolaiv Astronomical Observatory Research Institute, Obsevatorna 1, Mykolaiv 54030, Ukraine

³South African Astronomical Observatory, P.O. 7925, Cape Town, South Africa

Metal-poor stars allow us to establish the early history of the Milky Way (MW), the nucleosynthesis yields from early mergers of neutron stars (NSM) and massive supernovae (SN), and also the chemical evolution and structure of the MW in general. On the base of spectra obtained using echelle-spectrograph fibre-fed HRS by Southern African Large Telescope (SALT, 11 m) in 2018-2020, the atmospheric parameters and elemental abundances of four metal-poor star HD 6268, HD 121135, HD 195636 and TYC 5594-576-1 ($[\text{Fe}/\text{H}] \sim -1.5$ -- -3.0) have been studied. The abundances of C, O, Na, Mg, Al, Ca, Sr, Ba, Eu and Th, which are important in the analysis of enrichment sources of early Galaxy were calculated using the synthetic spectrum method, taken into account the hyperfine structure (HFS) for the Ba, Eu II lines. The iron abundance was determined based on the equivalent widths of lines. The carbon abundance was obtained by the molecular synthesis fitting for the region of CH (4300-4330 Å). For several elements the NLTE abundance corrections have been applied. The relationship between the chemical enrichment of stars and their belonging to the populations of the early Galaxy was considered.