

Recent advances on understanding the s-process

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The understanding of the s-process is a key to explain the contribution of the r-process elements to the abundance pattern of the stars. One of the production site of s-process elements is in the interior of thermally pulsating AGB stars. Barium stars belong to a binary system where the companion star has evolved through the AGB phase and transferred elements heavier than Fe produced by the slow neutron capture process onto the secondary star, which is now observed as a Ba star. Comparison of the derived s-process abundances from the largest set of homogeneous high resolution spectra of Ba stars and different non-rotating AGB models with ^{13}C as the main neutron source show the same trend: increase of the hs-type/lr-type element ratio (for example, [Ce/Y]) with decreasing metallicity. Although the models are in agreement with the observational data, further improvement on neutron capture cross sections are necessary to be able to make a more accurate comparison and to have a better understanding on the abundance pattern of each star.