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Stellar neutron sources and s-Process in Massive Stars R. TALWAR, G.P.A. BERG, University of Notre Dame, L. BIN, Osaka University, M. COUDER, R. DEBOER, X. FANG, University of Notre Dame, H. FUJITA, Y. FUJITA, Osaka University, J. GOERRES, University of Notre Dame, K. HATANAKA, T. ITO, Osaka University, T. KADOYA, Kyoto University, A. LONG, University of Notre Dame, K. MIKI, Osaka University, D. PATEL, University of Notre Dame, A. TAMII, Osaka University, M. WIESCHER, University of Notre Dame, T. YAMAMOTO, M. YOSOI, Osaka University — Potential stellar neutron sources for the s-process in massive stars are associated with α-capture reactions on light nuclei. The capture-reaction rates provide the reaction flow for the buildup of the neutron sources ^{22}Ne, and ^{26}Mg during the helium-burning phase in stars. A critical influence on these reactions is expected to come from low-energy resonances at stellar energies between 300 keV and 1500 keV. It is possible that these resonances are suspected to correspond to pronounced cluster structures near the α-threshold. Direct measurements of capture reactions to study these cluster states are handicapped by the Coulomb barrier and limited detector resolutions. Hence, inelastic α-scattering on these nuclei has been used as an alternative tool to probe into the level structure. Also α-transfer technique has been used to extract α-strength information. In reference to this, the experiments performed using the Grand Raiden Spectrometer at RCNP, Osaka will be discussed and preliminary results will be presented.

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