

Abstract Submitted  
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**Stellar Neutron Sources and s-Process in Massive Stars** R. TALWAR, G.P.A. BERG, T. ADACHI, M. COUDER, H. FUJITA, J. GORRES, M.N. HARAKEH, K. HATANAKA, T. ITO, A. LONG, A. MATIC, H. MATSUBARA, J. MATTA, M. NAGASHIMA, T. OGURA, D. PATEL, Y. SAKEMI, H. SCHATZ, Y. SHIMBARA, Y. SHIMIZU, T. SUZUKI, A. TAMII, T. WAKASA, M. WIESCHER, M. YOSOI — Potential stellar neutron sources for the s-process in massive stars are associated with  $\alpha$ -capture reactions on light nuclei. The capture-reaction rates provide the reaction flow for the buildup of the neutron sources  $^{22}\text{Ne}$ , and  $^{26}\text{Mg}$  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. These resonances are characterized by a pronounced cluster structure near the  $\alpha$ -threshold. Direct measurements of capture reactions to study the cluster structure are handicapped by the Coulomb barrier and limited detector resolutions. Hence, inelastic  $\alpha$ -scattering on these nuclei has been used as an alternative tool to probe into the level structure. In reference to this, the experiment performed using the Grand Raiden Spectrometer at RCNP, Osaka will be discussed and preliminary results will be presented.

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