

Abstract Submitted
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The (${}^7\text{Be},{}^3\text{He}$) Reaction: A New Tool for Alpha Spectroscopy¹

F.D. BECCHETTI, H. AMRO, HAO JIANG, A.N. VILLANO, M. OJARUEGA, U. Michigan-Ann Arbor, J.J. KOLATA, A. ROBERTS, U. Notre Dame, TWIN SOL COLLABORATION — Recent experiments done at the UM-UND low-energy RNB facility *TwinSol* have shown that the (${}^7\text{Be},{}^3\text{He}$) reaction selectively populates alpha-cluster states (in the case studied, ${}^{16}\text{O}$) with relatively large cross sections [1]. As will be discussed, this reaction has a number of advantages over both (${}^6\text{Li},\text{d}$) and (${}^7\text{Li},\text{t}$) as an alpha-transfer reaction and in particular this reaction for various reasons is not a direct analog of (${}^7\text{Li},\text{t}$). Thus it can be considered to be a new tool (among few available) for identifying alpha-cluster states in nuclei. Further experiments are planned both at the *TwinSol* facility as well as the new ReA facility at MSU. To facilitate experiments at UND, a new large (ca.1 m dia.) chamber has been built to accommodate large area position-sensitive detectors and improved time-of-flight. Also, a new technique for making single-sided enriched oxygen targets suitable for low-energy (${}^7\text{Be},{}^3\text{He}$) studies has been developed and will be reported elsewhere (M. Febraro *et al.*, this conference).

[1] “ ${}^7\text{Be}$ -induced α -transfer reaction on ${}^{12}\text{C}$,” H. Amro, *et al.*, Eur. Phys. J. Special Topics **150**, 1-7 (2007).

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