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**Constructing a Radon Scrubber for Air** ANDREW SCHMITZ, XIAOYI YANG, DONGMING MEI, VINCENTE GUISEPPE, CHAO ZHANG, YONGCHEN SUN, JASON SPAANS, University of South Dakota — A recurring problem in low background physics is the presence of the decay products of  $^{222}\text{Rn}$  (radon). The particularly treacherous aspect of radon is its gaseous nature and the long half-life of its daughters. Many industrial devices for air radon removal are sold on the market, but none achieve the removal factor required by our experiments in DUSEL. Therefore, we must design our own system to remove the radon from the air. This paper will show a radon removal system that we built at USD using charcoal. We constructed a single charcoal column system to perform a “spike” test, where a chamber is used to gather large amount of radon and then flushed with nitrogen. The radon arrives in the charcoal in the form of a pulse. This technique will allow us to better understand the adsorption and desorption properties of the charcoal under specific flow rates and pressures. A large pressure swing system will be built after the spike test.

Andrew Schmitz  
University of South Dakota

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