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Performance of a Novel Gas Separation Research Column at Sanford Laboratory[1] ANGELA ALANSON CHILLER[2], CHRISTOPHER CHILLER[3], DONGMING MEI[4], Univ of South Dakota — A world-wide rise in demand for ultrapure materials has necessitated innovation in the production of low impurity and isotopically separated materials that either has not been utilized in these new applications or relies on aging or energy intensive methods. These materials are sought after for large physics investigations, nuclear non-proliferation detection industries, medical imaging and new frontiers in electronic applications. Techniques in separating and purifying nuclear magnetic resonance isotopes of carbon, oxygen, xenon, krypton, and nitrogen are being developed at Sanford Laboratory, Lead, SD. A two-meter laboratory scale selective phase change column designed specifically for real-time sampling of the gas space at specific temperature and pressure is operated at gas/liquid and gas/solid equilibrium temperatures and pressures for selected gases. We report initial results and future applications.

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