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**Using MR imaging methods for measurement of 3-He cells during pumping** STEVEN PARNELL, MARTIN DEPPE, University of Sheffield, STEPHEN BOAG, ISIS, STFC, MARK BOYCE, mark.boyce@stfc.ac.uk, SELMA AJRAOUI, JUAN PARRA-ROBLES, JIM WILD, University of Sheffield, UNIT OF ACADEMIC RADIOLOGY,UNIVERSITY OF SHEFFIELD,UK TEAM, ISIS, STFC, UK TEAM — We present details of a system for 1-D MR imaging and diffusion measurements of 3He cells during optical pumping. We have implemented at 10G a 1-D gradient system and we use a gradient echo pulse for imaging and bi-polar gradients to allow measurements of the diffusion constant. We perform 1-D imaging for monitoring the spatial distribution of the gas polarisation in the cell (important in 129Xe). For diffusion we measure a number of cells. In free diffusion, as is the case in large cells the diffusion constant can be used as a measure of cell pressure and temperature. The system is used to measure the pressure in sealed cells and compared with neutron transmission measurements. Finally we investigate the effects of heating from the laser in the cells.

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