

Abstract Submitted
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NMR studies of Phase Transitions in Alkali Metal Films on Glass Substrates¹ K. ISHIKAWA, B. PATTON, Y.-Y. JAU, W. HAPPER, Princeton University Physics Department — We report NMR spectra of thin ^{87}Rb films on glass in an investigation of the “curing” process which is commonly observed in alkali cells. The cells were cycled in temperature over a range of 5 C to 170 C and the rubidium solid-liquid phase transition was studied. The spectra of these two phases are resolvable at 9.4 T because of their different Knight shifts. Hysteresis in the observed phases confirmed reports of a curing phenomenon, and after time a supercooled liquid Rb peak could be detected at temperatures far below the predicted freezing point of 39 C. Moreover, a third NMR peak was observed at temperatures below the melting point whose frequency varied with temperature and spanned the solid and liquid frequency ranges. To our knowledge, this is the first study to characterize this additional resonance. We have also performed analogous measurements on ^{133}Cs films.

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