

**PARAMAGNETIC PROBES TO STUDY PrNi<sub>5</sub>?**

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The Van-Vleck paramagnet PrNi<sub>5</sub> has been the focus of many studies in the past as a result of its usefulness as a nuclear cooling agent (see for example [1]). Extensive continuous wave praseodymium NMR measurements have been carried out on this compound [2]. However pulsed NMR and therefore precise relaxation measurements particularly at mK temperatures have proved elusive. In this work we have proposed to use radiative gamma-ray detection to indirectly measure Pr NMR in PrNi<sub>5</sub> via cross relaxation to suitable paramagnetic impurity probes placed at Ni lattice sites. <sup>57</sup>Co was chosen as the most compatible nuclear orientation isotope with an appropriate nuclear g-factor. The choice of <sup>57</sup>Co also allows the use of Mössbauer spectroscopy to check the site occupancy.

This poster details the production of a <sup>57</sup>Co doped PrNi<sub>5</sub> single crystal specimen including the specimen preparation problems encountered, <sup>57</sup>Fe Mössbauer and preliminary nuclear orientation measurements.

- [1] C Buchal, K J Fischer, M Kubota, R M Mueller and F Pobell, J. Phys. **39** (1978) L457.
- [2] N Kaplan, D L Williams and A Grayevsky, Phys.Rev. B **21** (1980) 899.