

Abstract Submitted
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SmN; a zero-moment ferromagnetic semiconductor JOE TRODAHL, BEN RUCK, Victoria University of Wellington, CLAIRE MEYER, Néel Institute, Grenoble, ANDREW PRESTON, Boston University, BART LUDBROOK, Victoria University of Wellington, JULIO CRIGINSKI CEZAR, ESRF, Grenoble — The rare-earth nitrides condense into the NaCl structure with a slowly-varying lattice constant across the series. We have grown a number of them, as polycrystalline and/or epitaxial films, and so far find them all to be semiconductors with a ferromagnetic phase at low temperature. SmN is especially interesting for its near cancellation between spin and orbital moments, in which the spins order ferromagnetically below 27 K with a net magnetic moment of order $0.03 \mu_B/\text{Sm}$. It is thus a nearly fringe-field free ferromagnetic semiconductor that couples so weakly to an applied field that its coercive field is very large; both of these properties are attractive for spintronics.

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