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FMR Study of the Field Dependence of the Ferromagnetic Transition in an Organic Magnet ALEXEY KOVALEV, NHMFL, Tallahassee, FL32310, STEPHEN WINTER, University of Waterloo, Ontario N2L 3G1, Canada, STEPHEN HILL, NHMFL and Florida State University, Tallahassee, FL32310, RICHARD OAKLEY, University of Waterloo, Ontario N2L 3G1, Canada — Organic heterocyclic thia/selenazyl radicals have unique magnetic properties. First and foremost, in their crystalline form, they experience a transition to a ferromagnetic state at temperatures that are the highest for any material containing only non-metallic elements. Second, their low temperature uniaxial anisotropy field is the highest among purely organic ferromagnets [Winter et al., JACS **133**, 8126 (2011)]. To investigate the effect of a magnetic field on the transition in the mixed Se-S compound (T_c = 12.5 K) at zero field, we employ ferromagnetic resonance (FMR) absorption as a measure of the anisotropy field for a single crystal. We also focus on the temperature and field dependence of the FMR linewidth. Our main finding is that the application of a field significantly broadens the ferromagnetic transition, with a noticeable FMR signal observed to as high as $2T_c$ in fields of a few tesla. Meanwhile, the FMR linewidth is relatively insensitive to frequency/field, though it becomes narrower upon decreasing the temperature and saturates below T_c. We will discuss the broadening of the ferromagnetic transition within the framework of scaling theory.

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