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**Upper Critical Fields of Molecular-Based Spin Ladders** BRIAN KEITH, CHRIS LANDEE, MARK TURNBULL, Clark University, NEIL HARRISON, NHMFL at LANL, MAGNETS BY DESIGN TEAM, NHMFL COLLABORATION — The upper critical (saturation) fields of several spin ladders was found using a high field, short pulse magnet at LANL. These compounds include  $Cu(Quinoxaline)Cl_2$ ,  $Cu(Quinoxaline)Br_2$ ,  $Cu(2,3dimethylpyrazine)Cl_2$ ,  $Cu(2,3dimethylpyrazine)Br_2$ ,  $Cu(methylpyrazine)Br_2$ , and  $Cu(methylpyrazine)Cl_2$ . The data were taken at temperatures as low as 460 mK with a pulsed field strength as high as 57 tesla. The upper critical fields were estimated by considerations of overcoming the exchange energies associated with all the compounds. These energies were extracted from model fits to the susceptibility data. These estimations agree reasonably well with the experimentally observed upper critical fields. We report on these results and compare the data to simulations of the magnetization as a function of field as a further check to confirm that these compounds obey the associated model systems.

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