Appendix

This Appendix presents the measured strains, critical temperatures, coercive fields, and critical fields of the b-axis-oriented Dy samples used in this research. These values are contained in Table A.1. It also contains the measured hysteresis loops for the samples, which appear as Figures A.1 through A.12 on the subsequent pages. Finally, this Appendix contains hysteresis loops for the samples in the antiferromagnetic state, which demonstrate the temperature-independence of the critical field, H_C.

Sample	%Y content	ε_{11} (%)	ε_{22} (%)	ε_{33} (%)	T_C (K)	H_{CO} (Oe)	H_C (kOe)
DY20	0	-2.24	1.15	-1.89	145	7.44	16.1
DY15B	16	-1.66	0.86	-1.43	135	7.03	14.0
DY17	28	-1.23	0.64	-1.08	110	5.09	12.0
DY13	40	-0.80	0.42	-0.73	97	5.10	12.0
DY33	64	0.06	-0.01	-0.03	78	2.20	11.0
DY14	75	0.50	-0.23	0.32	90	1.93	9.6
DY32	77	0.53	-0.25	0.35	115	2.47	7.9
DY26A	80	0.64	-0.30	0.43	135	2.47	7.0
DY26D	82	0.71	-0.34	0.49	140	2.03	n.a.
DY35	87	0.89	-0.43	0.64	145	2.89	n.a.
DY36F	95	1.18	-0.58	0.87	154	2.85	n.a.
DY23	100	1.36	-0.67	1.01	165	2.37	n.a.

Table A.1. The strains, critical temperatures. coercive fields and critical fields for the b-axis-oriented Dy samples used in this research. The percentage of Y contained in the alloy buffer layer and the in-plane strains ε_{11} and ε_{22} were obtained from x-ray diffraction measurements of the Y/Lu alloy buffer layers; the out-of-plane strains were calculated according to Eq. (1.8). The coercive fields are the average coercive fields obtained for increasing and decreasing applied field.

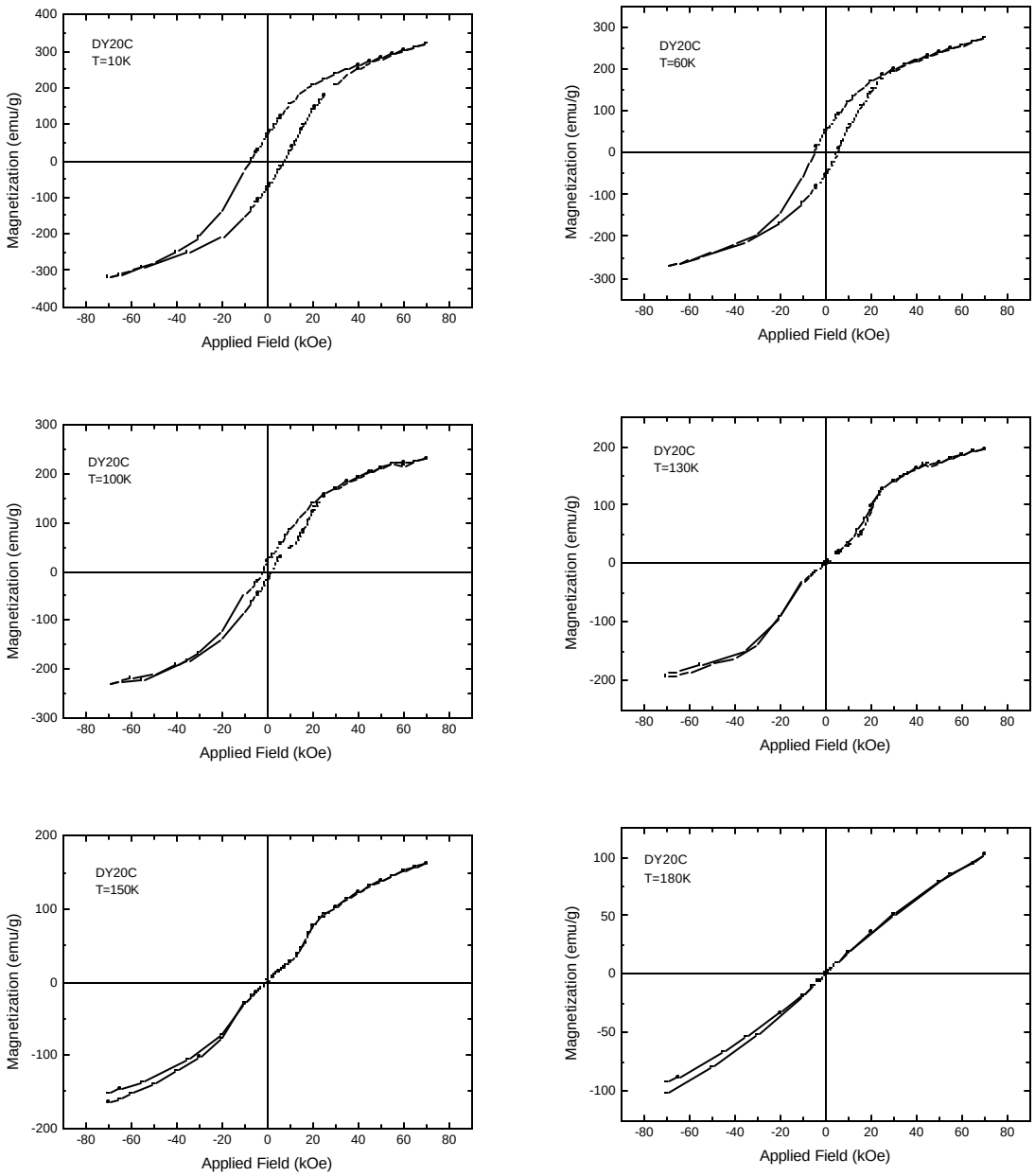

Figure A.1. Hysteresis loops for the sample DY20, with ε_{11}=-2.24%.

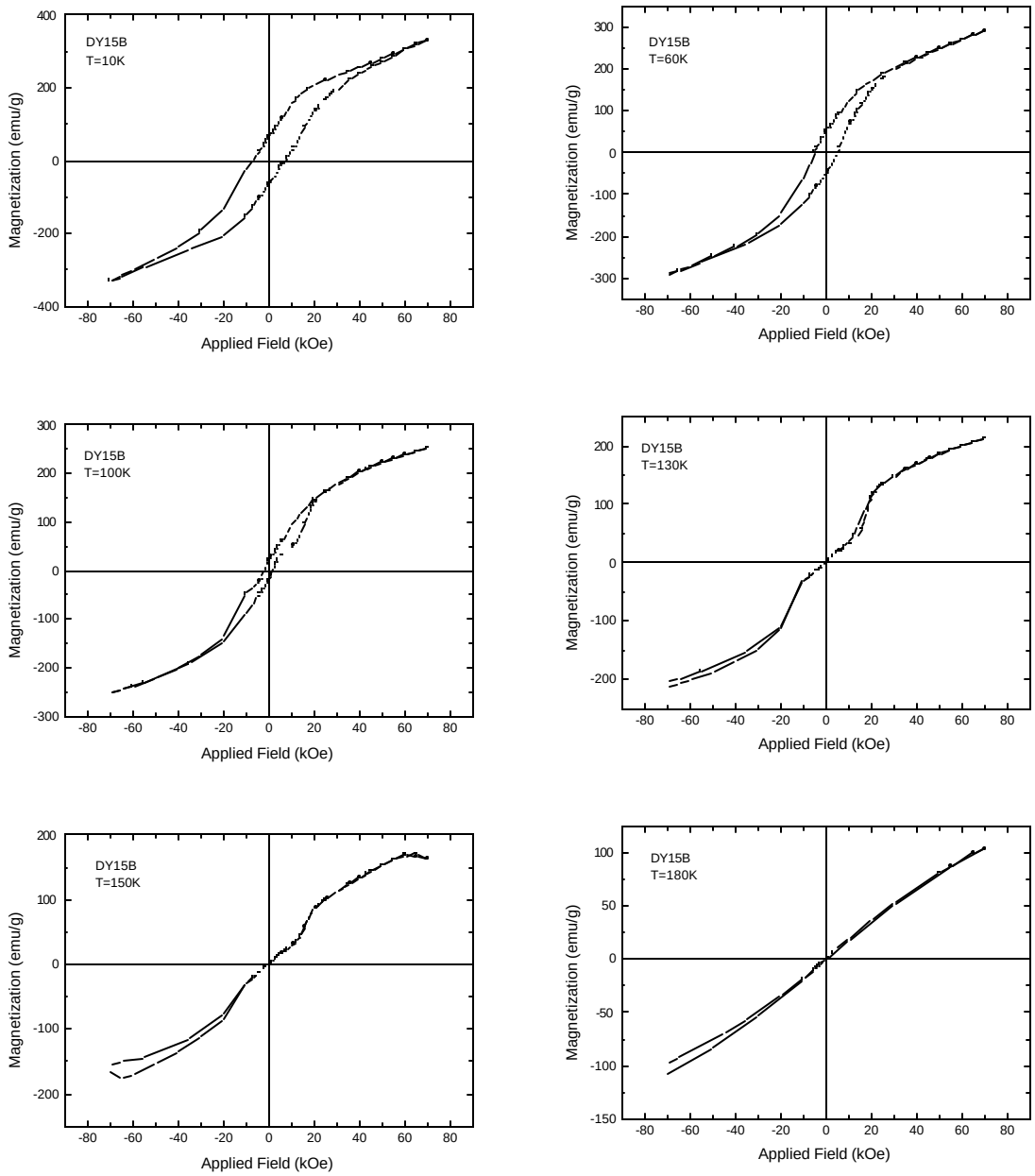

Figure A.2. Hysteresis loops for the sample DY15B, with ε_{11}=-1.66%.

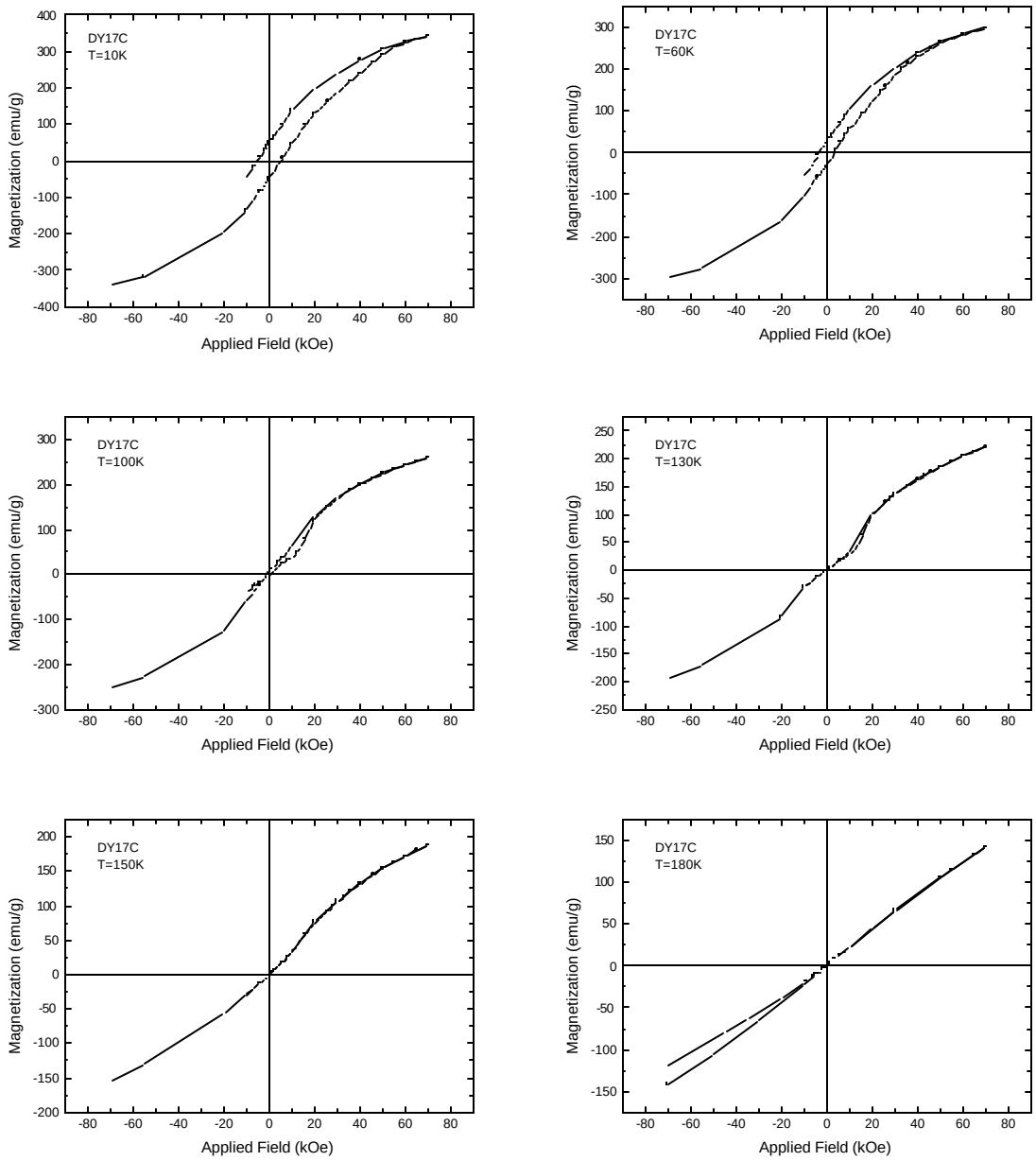

Figure A.3. Hysteresis loops for the sample DY17, with ε_{11}=-1.23%.

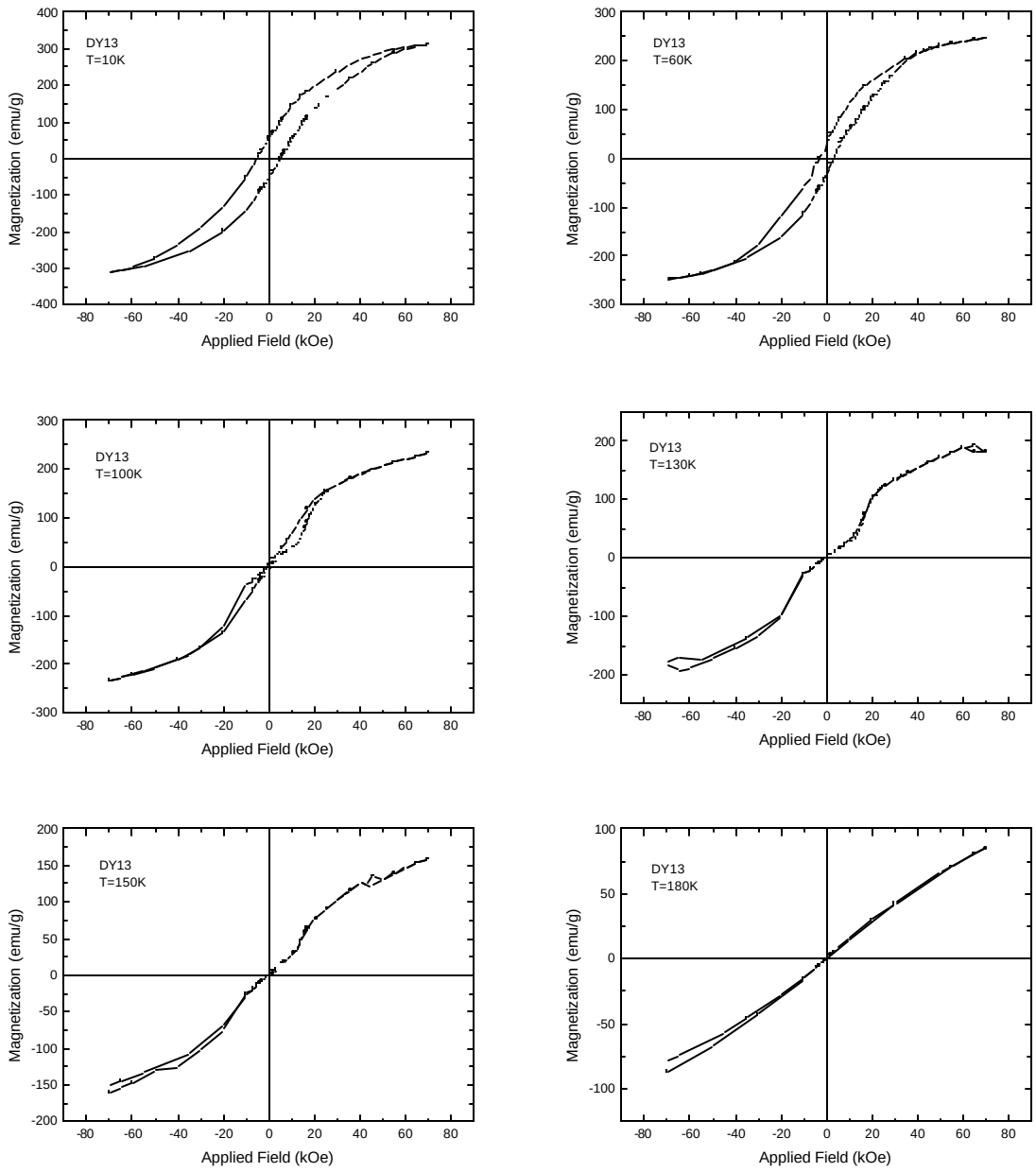

Figure A.4. Hysteresis loops for the sample DY13, with ε_{11}=-0.88%.

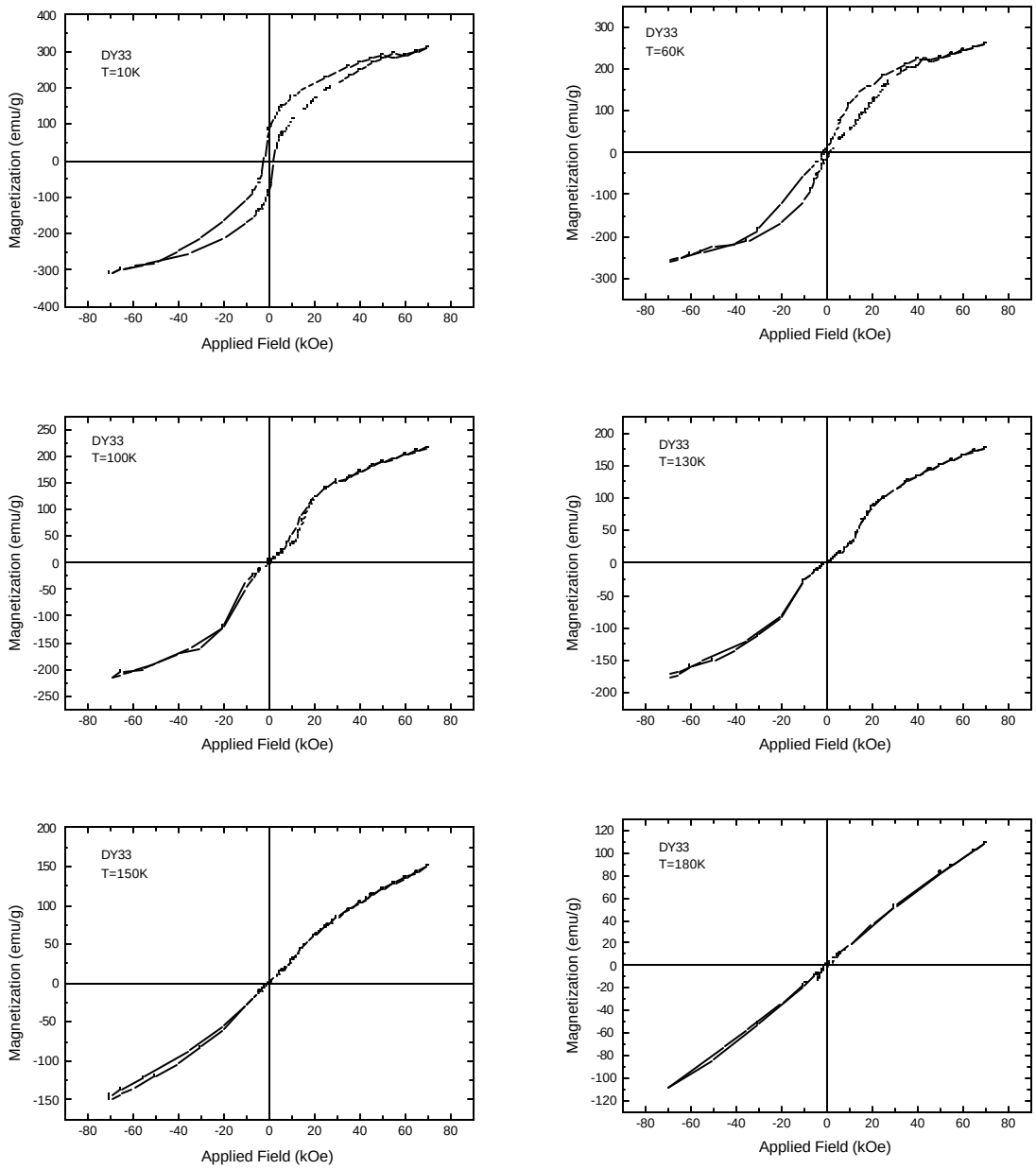

Figure A.5. Hysteresis loops for the sample DY33, with ε_{11}=+0.06%.

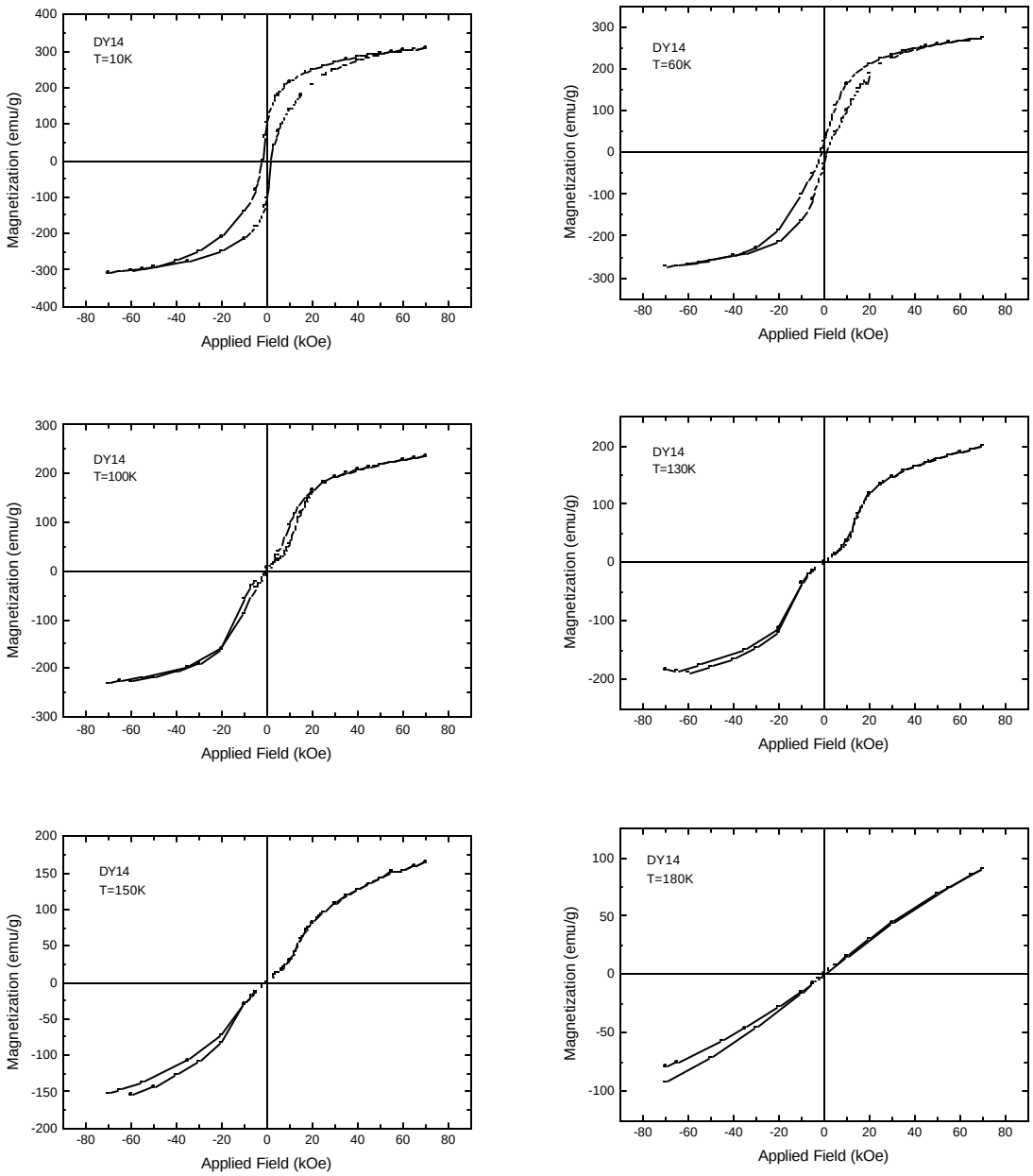

Figure A.6. Hysteresis loops for the sample DY14, with ε_{11}=+0.50%.

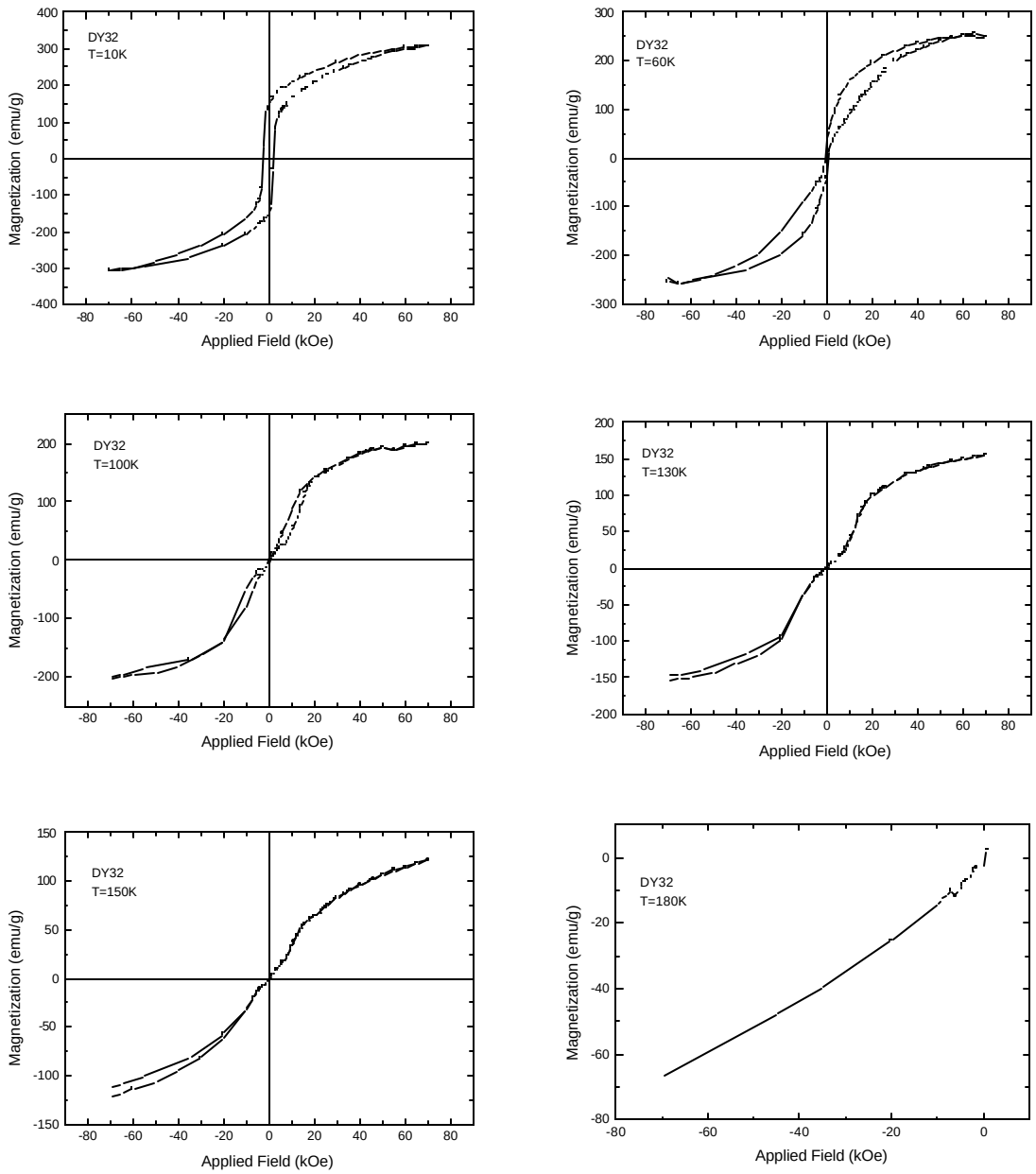

Figure A.7. Hysteresis loops for the sample DY32, with ε_{11}=+0.53%.

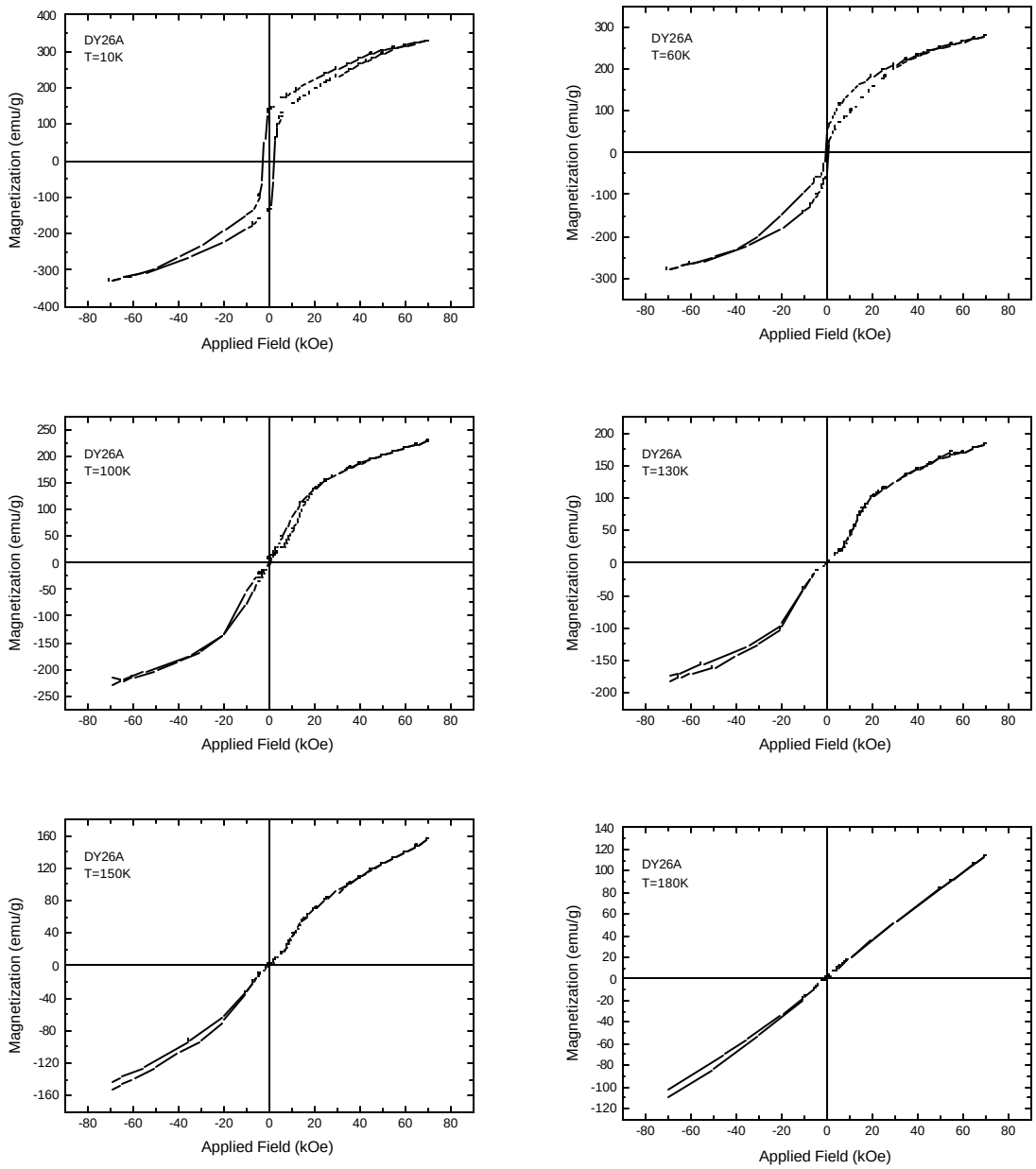

Figure A.8. Hysteresis loops for the sample DY26A, with ε_{11}=+0.64%.

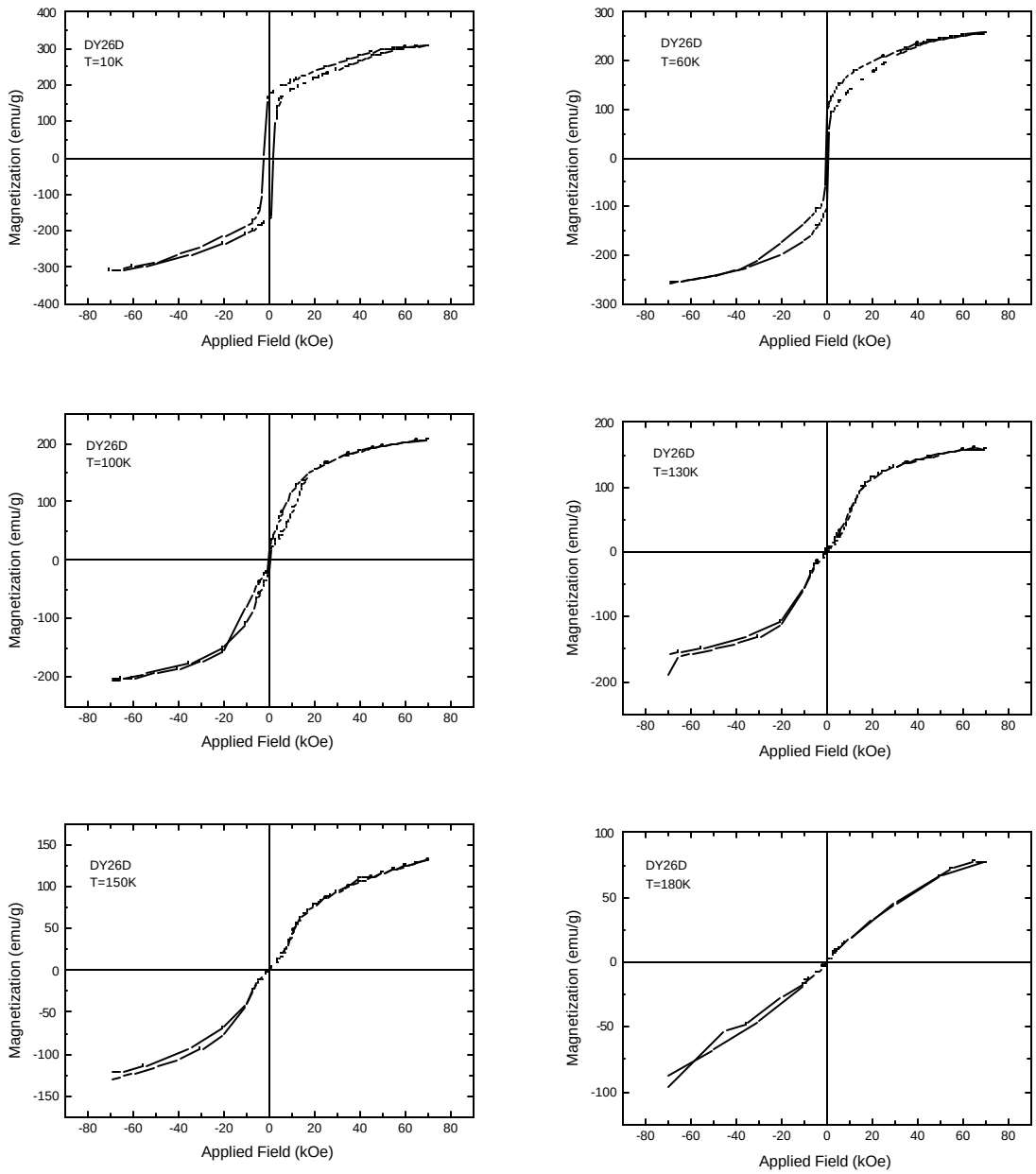

Figure A.9. Hysteresis loops for the sample DY26D, with ε_{11}=+0.71%.

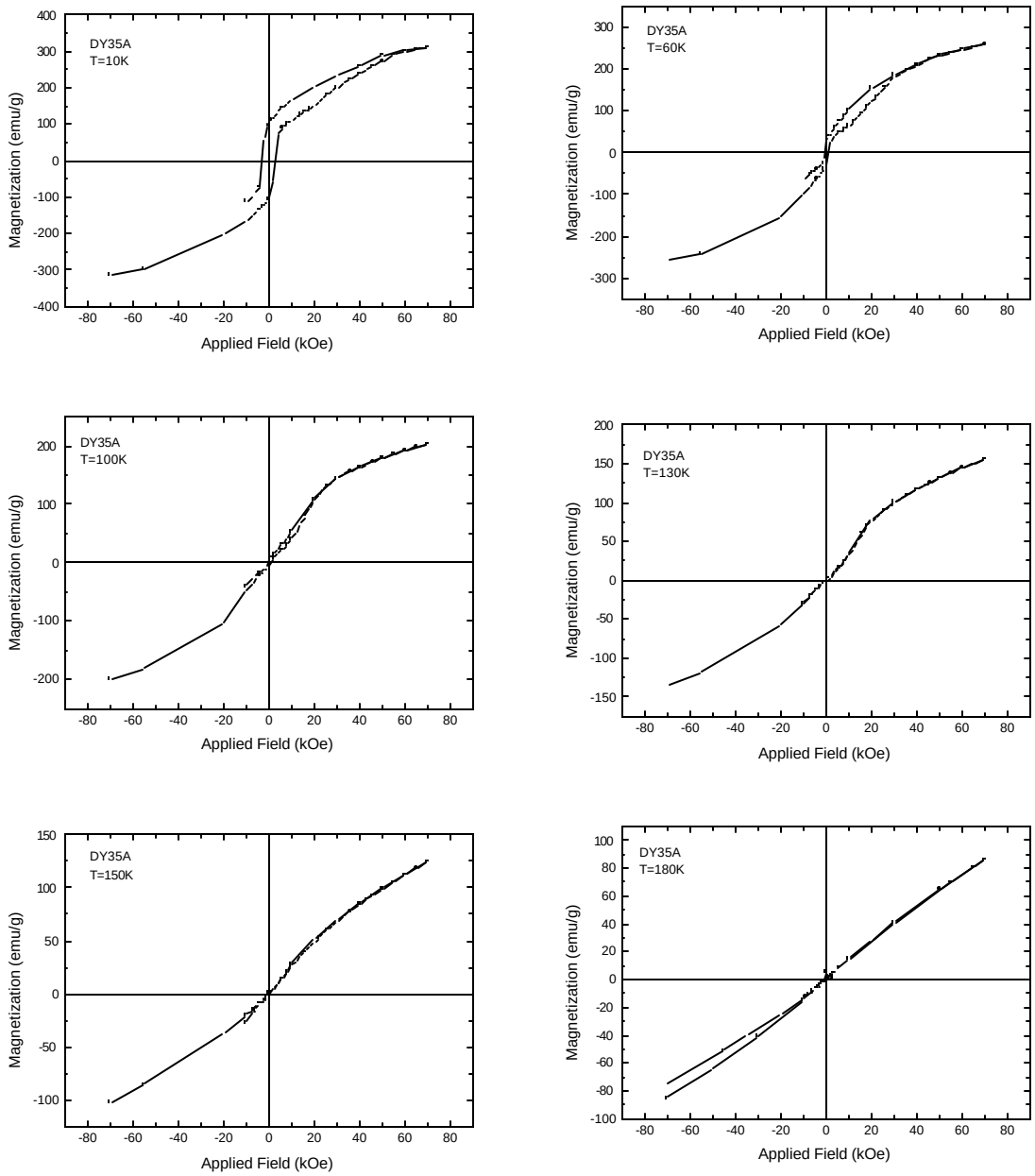

Figure A.10. Hysteresis loops for the sample DY35, with ε_{11}=+0.89%.

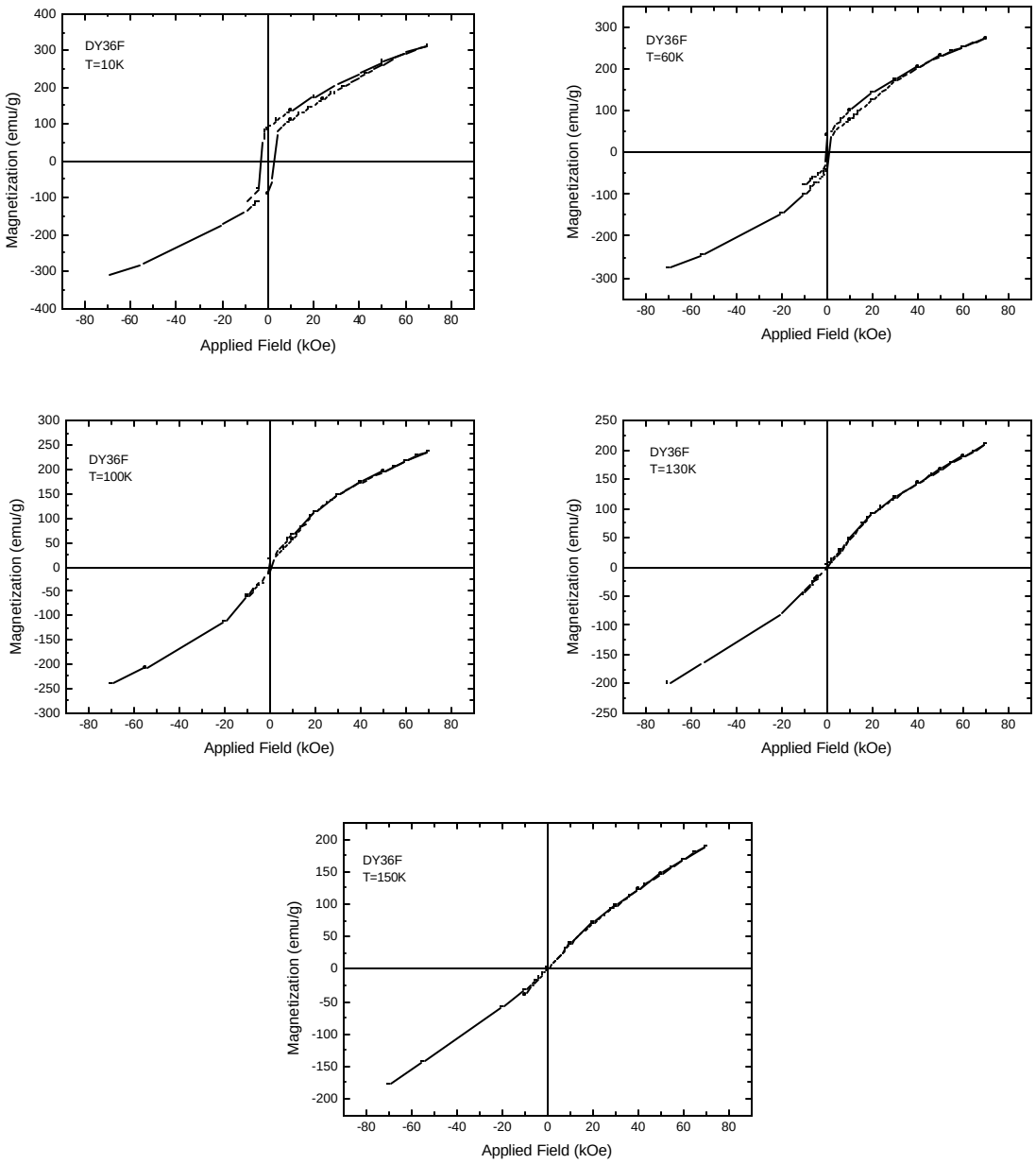

Figure A.11. Hysteresis loops for the sample DY36F, with ε_{11}=+1.18%.

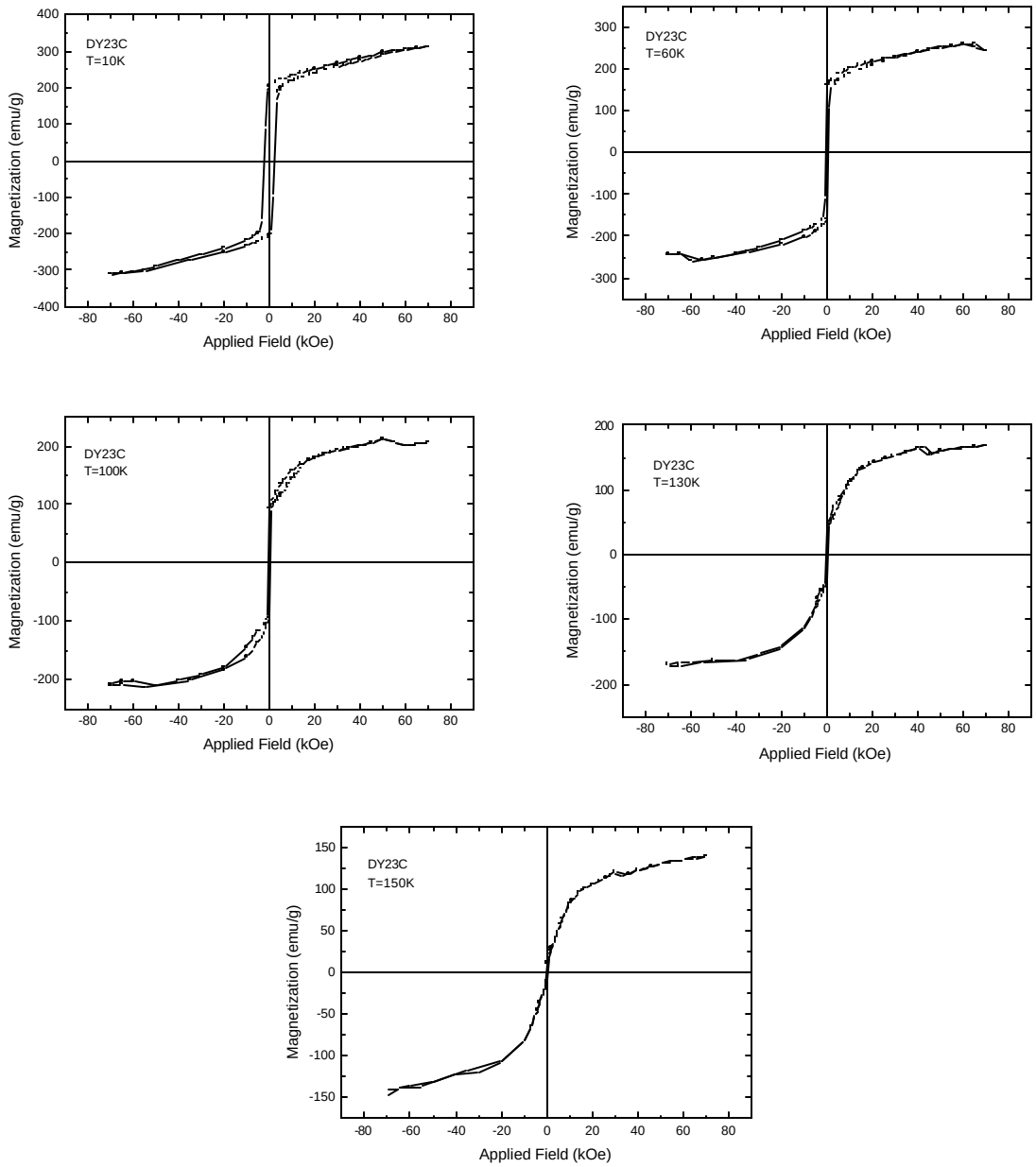

Figure A.12. Hysteresis loops for the sample DY23, with ε_{11}=+1.36%.

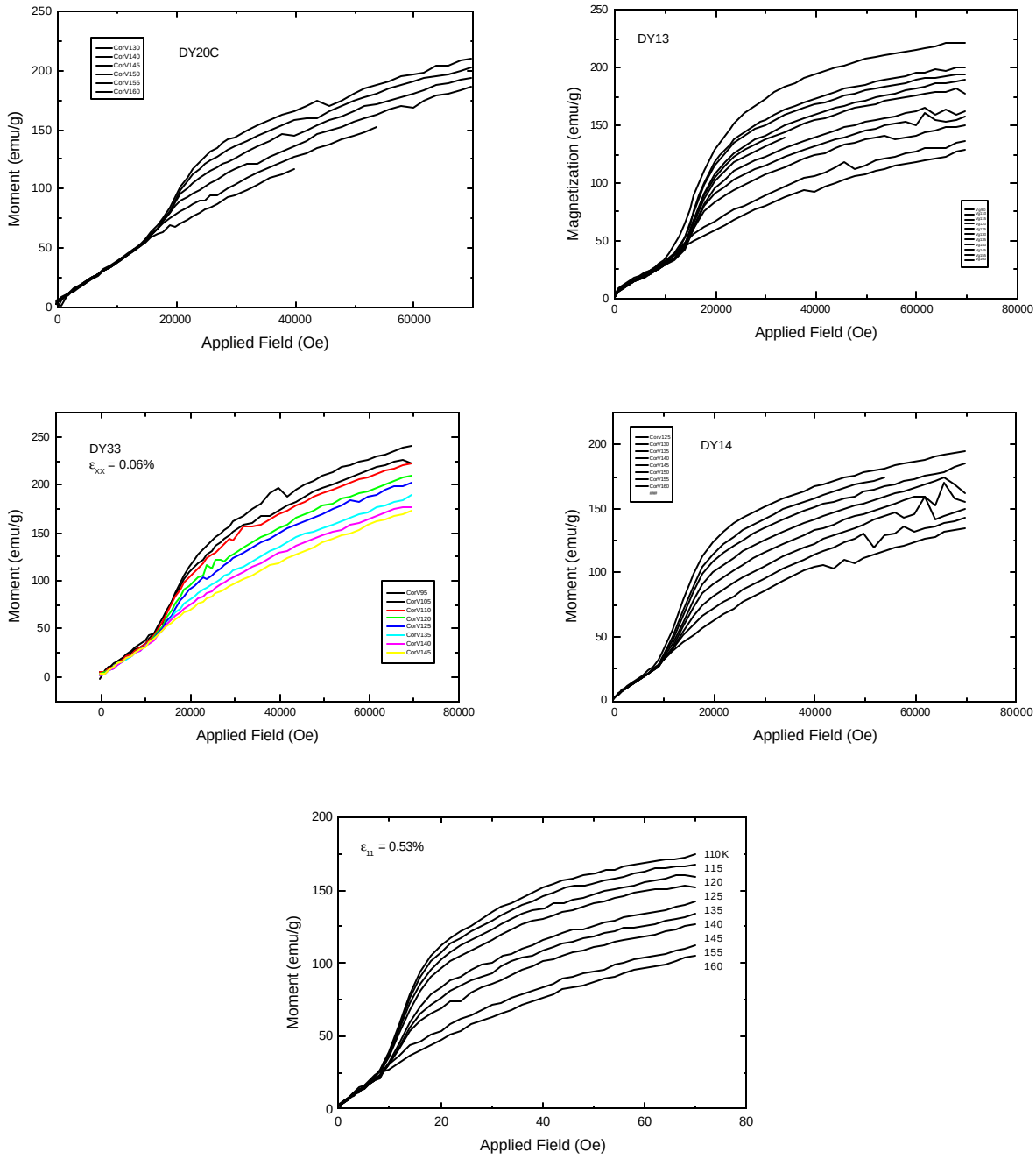

Figure A.13. Hysteresis loops for various samples in the antiferromagnetic phase, demonstrating that the critical field does not depend strongly on temperature.