

PERMANENT MAGNET PERFORMANCE GUIDE



GKN is focused on bringing a reliable rare earth magnet supply chain back to the North American and European regions. With a fully customizable powder and magnet production process in each region, all common RE magnet grades are possible. GKN will focus on high end magnets with high coercivity for traction motor applications. Other properties and grades available upon request.

GKN Rare Earth Magnet Grades

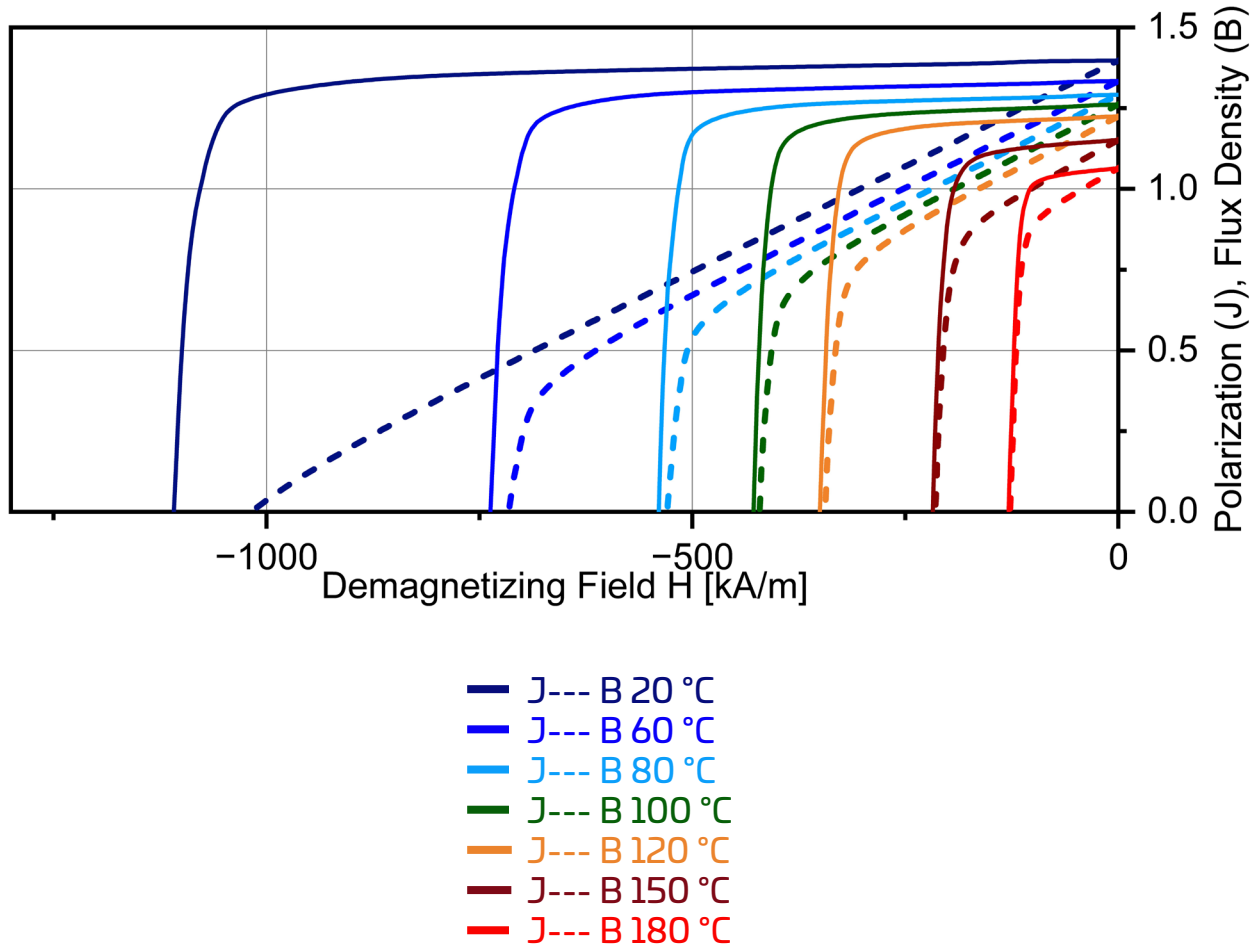
		$(BH)_{\max}$ (MGOe)															
		28	30	33	35	38	40	42	45	48	50	52	54	56	58		
H_c (kOe)	40	28VH	30VH	33VH	35VH	38VH	40VH	42Vh									230
	35	28AH	30AH	33AH	35AH	38Ah	40AH	42AH	45AH	48AH							230
	30	28EH	30EH	33EH	35EH	38EH	40EH	42EH	45EH	48EH	50EH	52EH					200
	25	28UH	30UH	33UH	35UH	38UH	40UH	42UH	45UH	48UH	50UH	52UH	54UH	56UH			180
	20			33SH	35SH	38SH	40SH	42SH	45SH	48SH	50SH	52SH	54SH	56SH	58SH		150
	17			33H	35H	38H	40H	42H	45H	48H	50H	52H	54H	56H	58H		120
	14				35M	38M	40M	42M	45M	48M	50M	52M	54M	56M	58M		100
12					N35	N38	N40	N42	N45	N48	N50	N52	N54	N56	N58		80

= GKN Magnet Focus (EV Motors Grades)

- Tb-Lean
- Dy-Rich/Tb-Lean
- Dy-Only
- HREE-Free

GKN N50

Permagraph Measurements at various temperatures

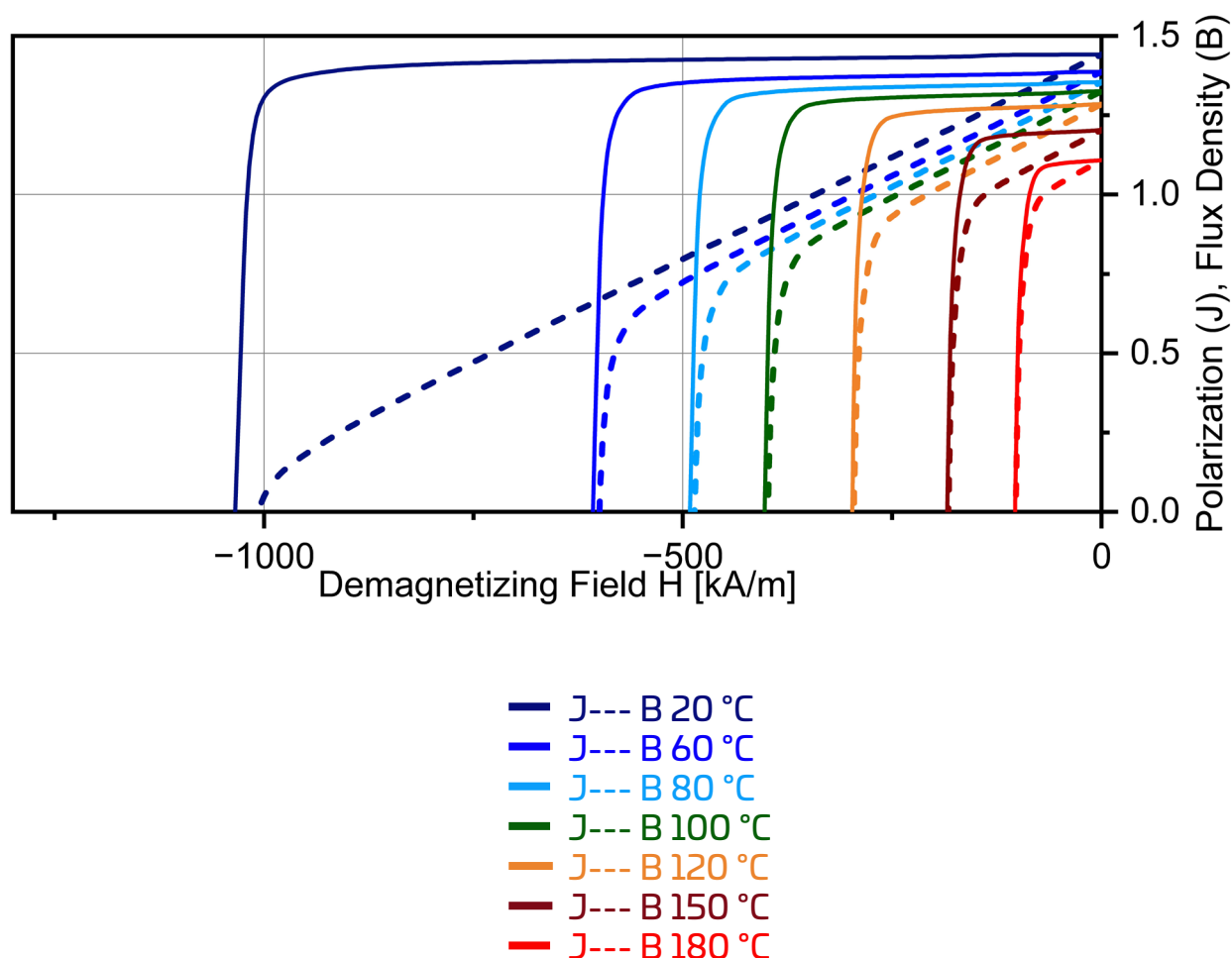


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
14.0 kG	12.8 kOe	13.9 kOe	47 MGOe	0.94
1.40 T	1018 kA/m	1109 kA/m	373 kJ/m ³	0.94

GKN N52

Permagraph Measurements at various temperatures

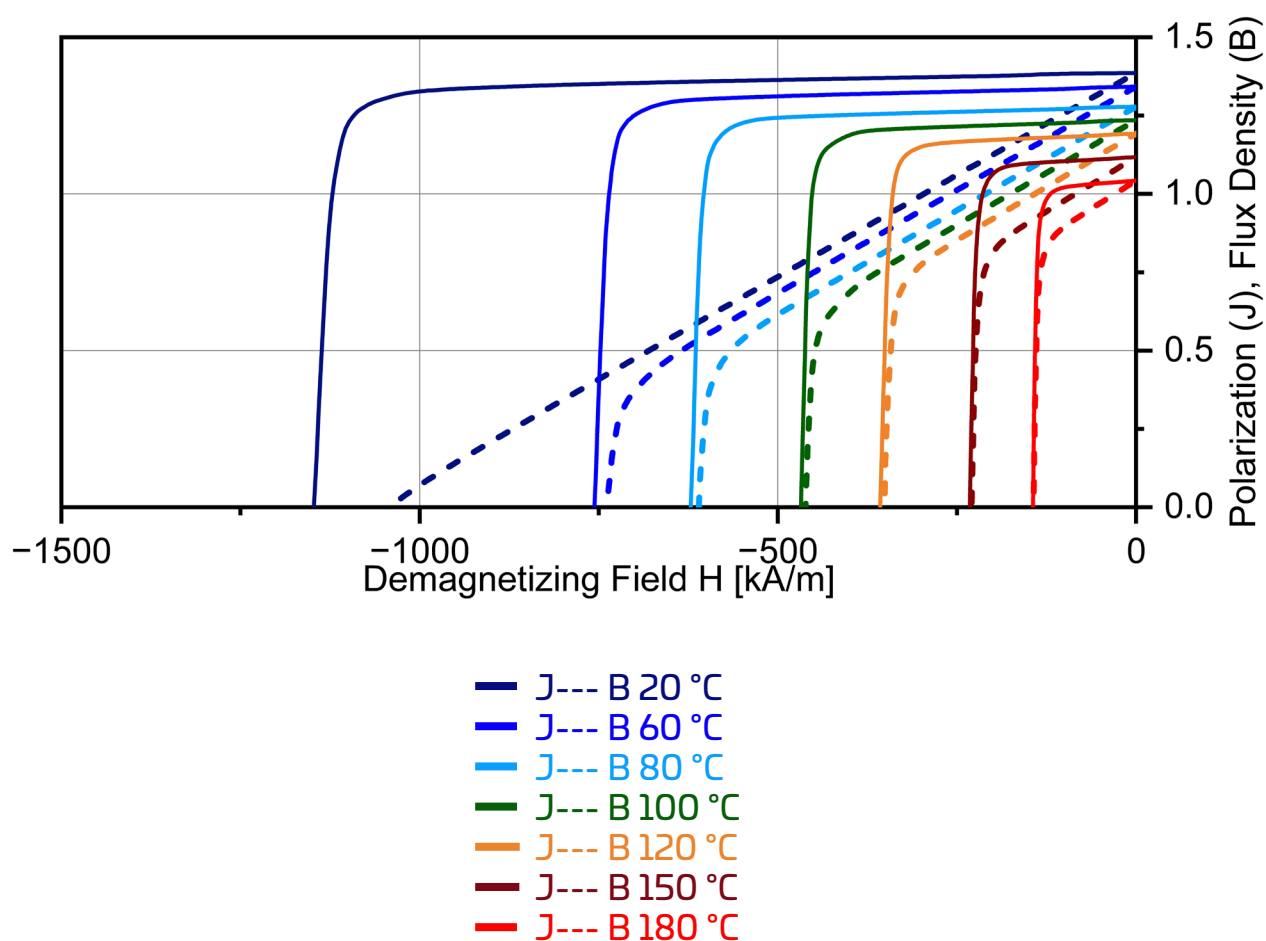


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
14.4 kG	12.7 kOe	13.0 kOe	51 MGOe	0.97
1.44 T	1007 kA/m	1035 kA/m	403 kJ/m ³	0.97

GKN 48M

Permagraph Measurements at various temperatures

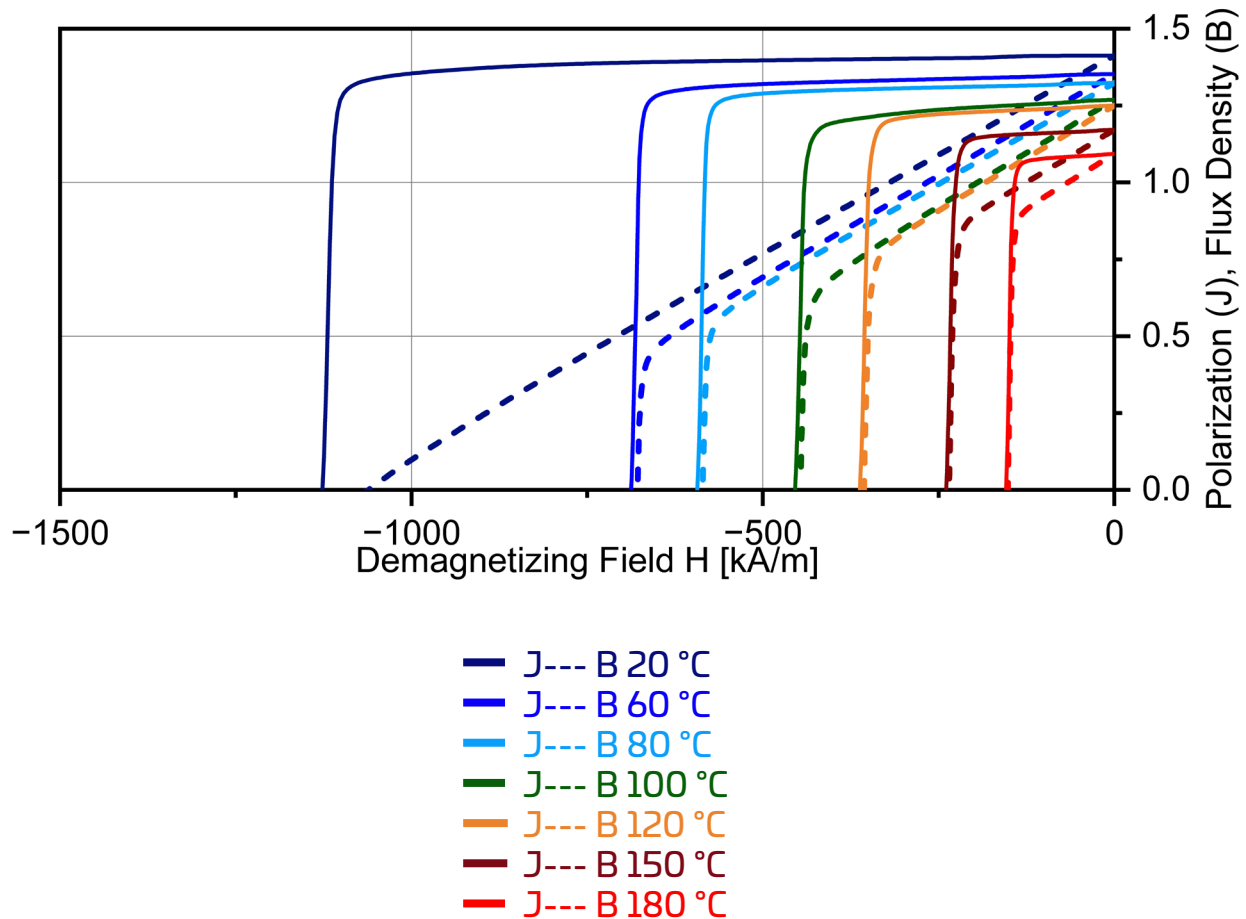


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.9 kG	13.7 kOe	14.4 kOe	46 MGOe	0.95
1.39 T	1042 kA/m	1148 kA/m	369 kJ/m ³	0.95

GKN 50M

Permagraph Measurements at various temperatures

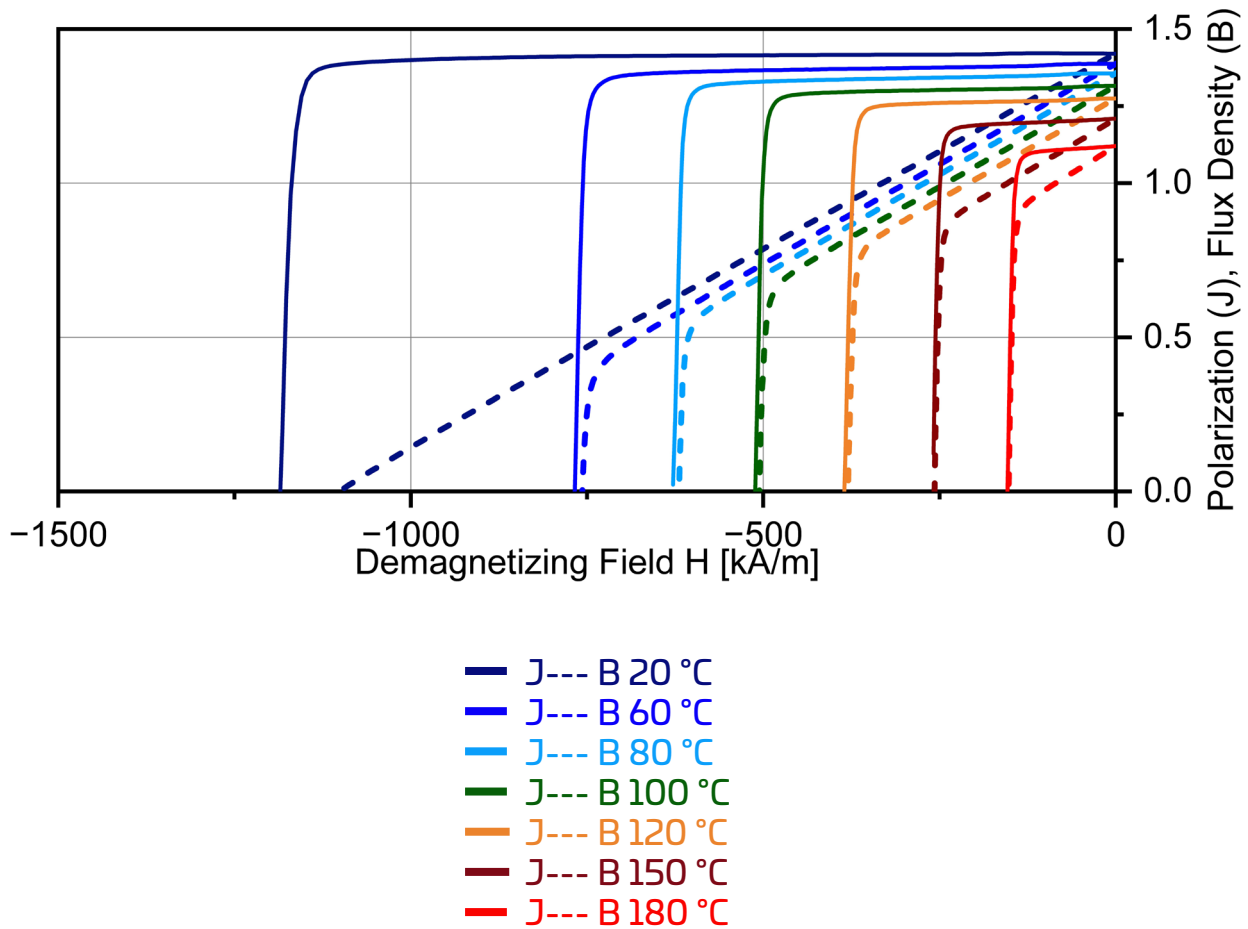


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
14.1 kG	13.3 kOe	14.2 kOe	49 MGOe	0.98
1.41 T	1061 kA/m	1127 kA/m	387 kJ/m ³	0.98

GKN 52M

Permagraph Measurements at various temperatures

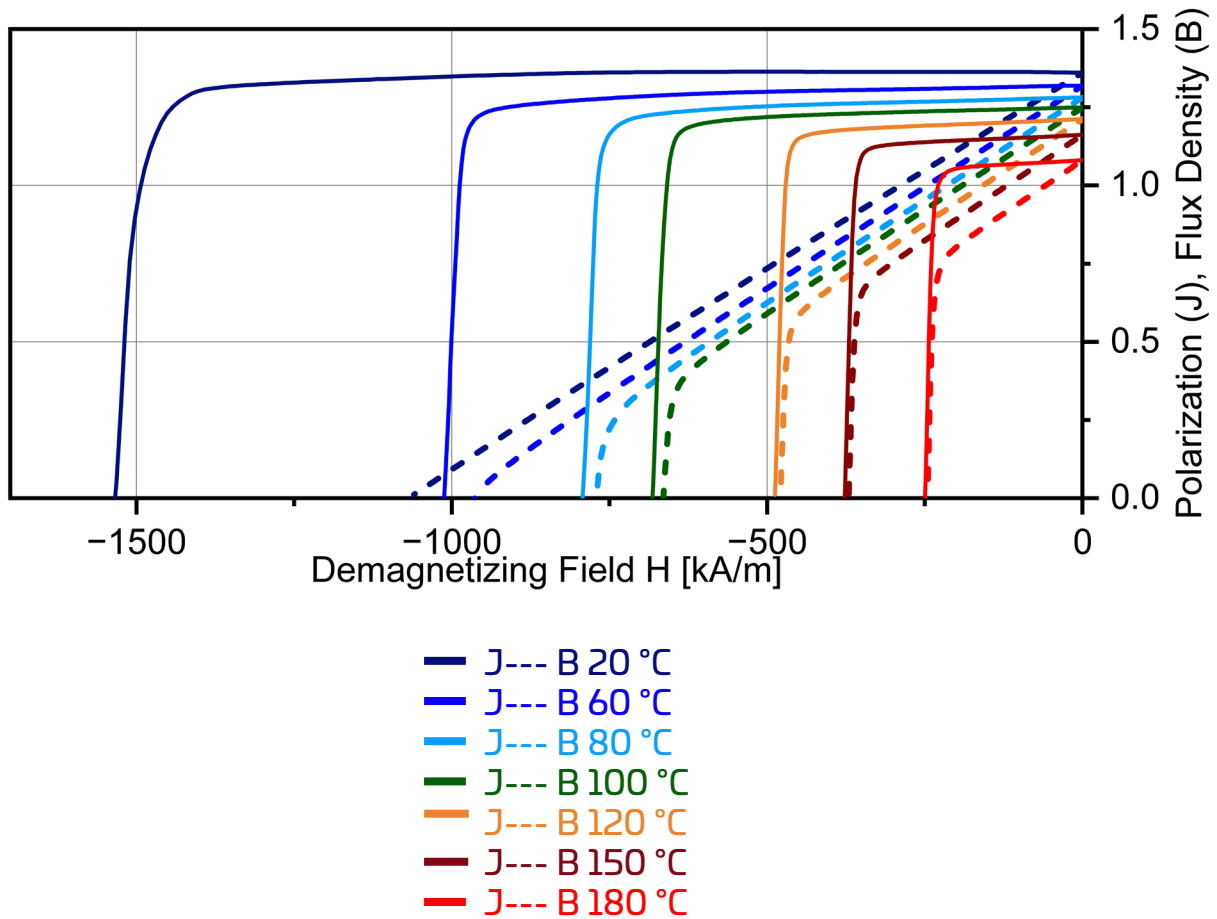


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
14.2 kG	13.8 kOe	14.9 kOe	50 MGOe	0.97
1.42 T	1102 kA/m	1185 kA/m	398 kJ/m ³	0.97

GKN 45H

Permagraph Measurements at various temperatures

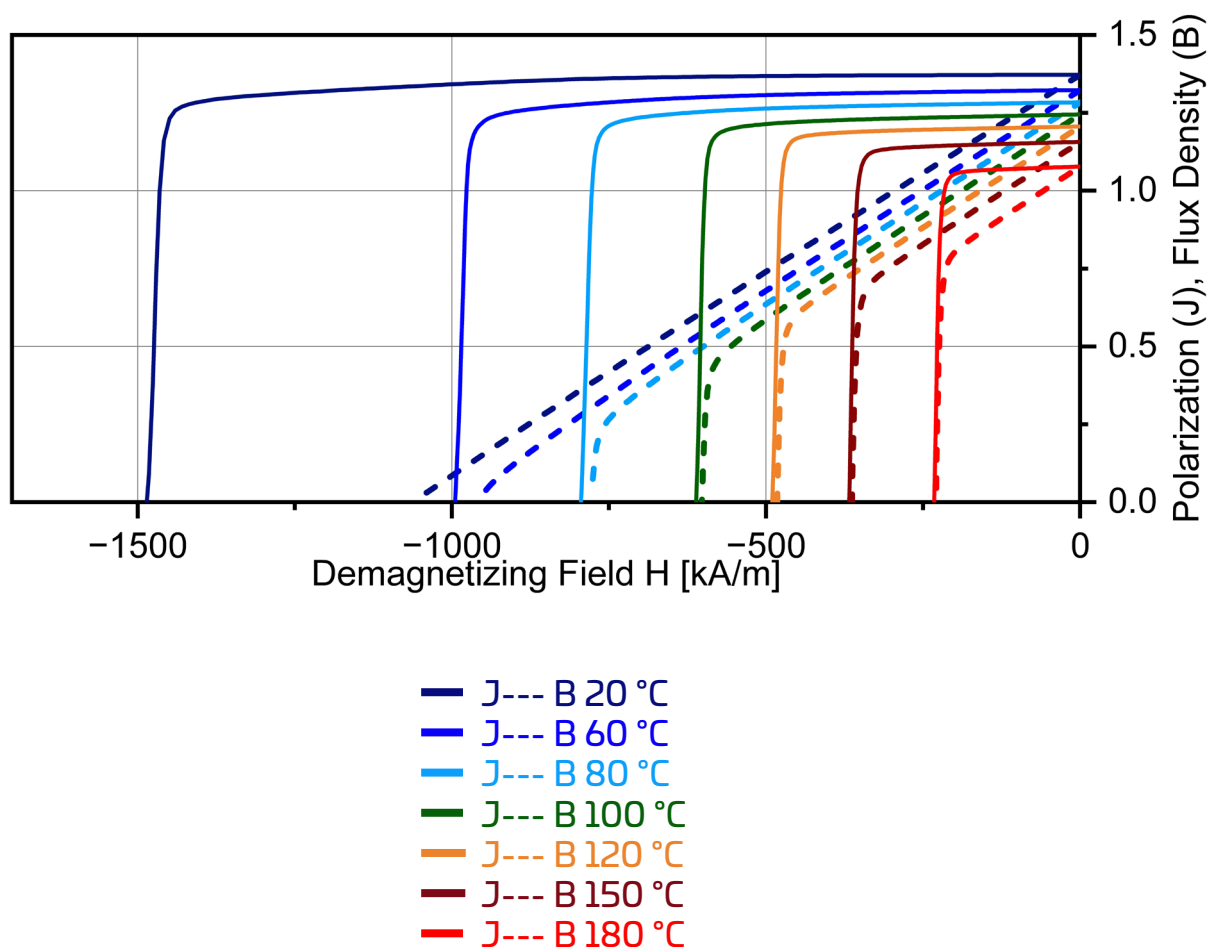


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.6 kG	13.4 kOe	194 kOe	51 MGOe	0.95
1.36 T	1069 kA/m	1544 kA/m	370 kJ/m ³	0.95

GKN 48H

Permagraph Measurements at various temperatures

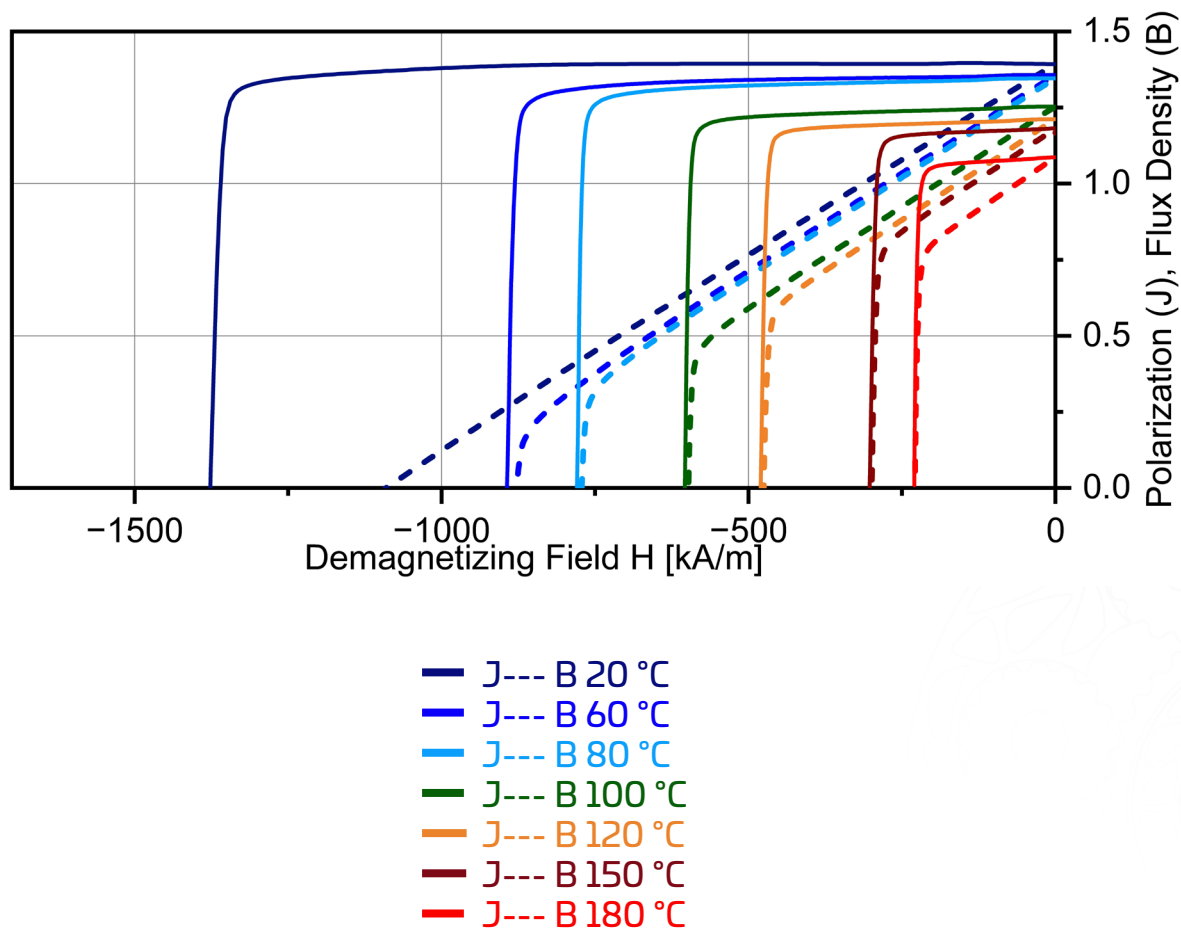


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.7 kG	13.4 kOe	18.7 kOe	47 MGOe	0.98
1.37 T	1063 kA/m	1485 kA/m	372 kJ/m ³	0.98

GKN 50H

Permagraph Measurements at various temperatures



Summary of Results at Room Temperature

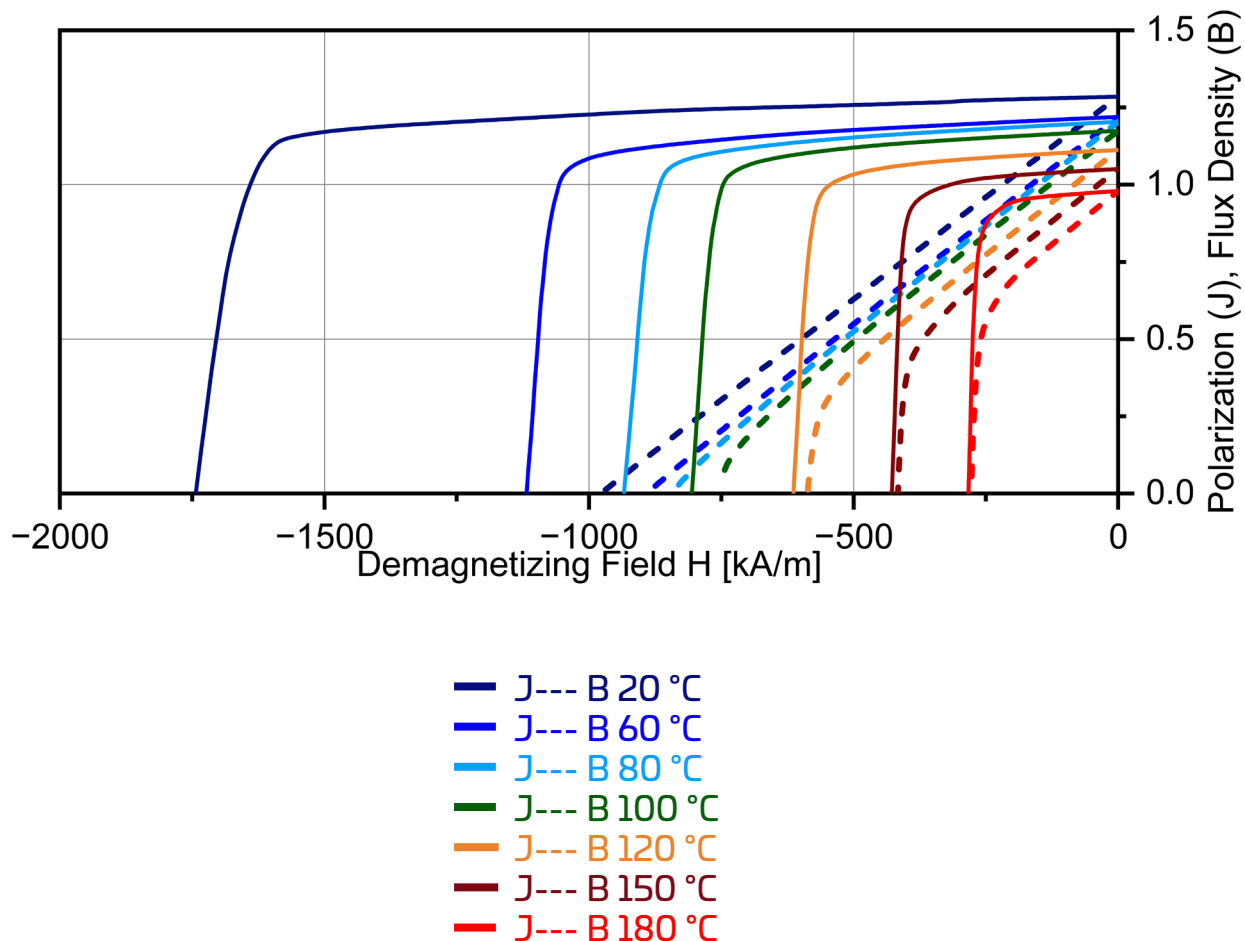
B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.9 kG	13.7 kOe	17.3 kOe	49 MGOe	0.98
1.39 T	1090 kA/m	1378 kA/m	387 kJ/m ³	0.98

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GKN 40SH

Permagraph Measurements at various temperatures

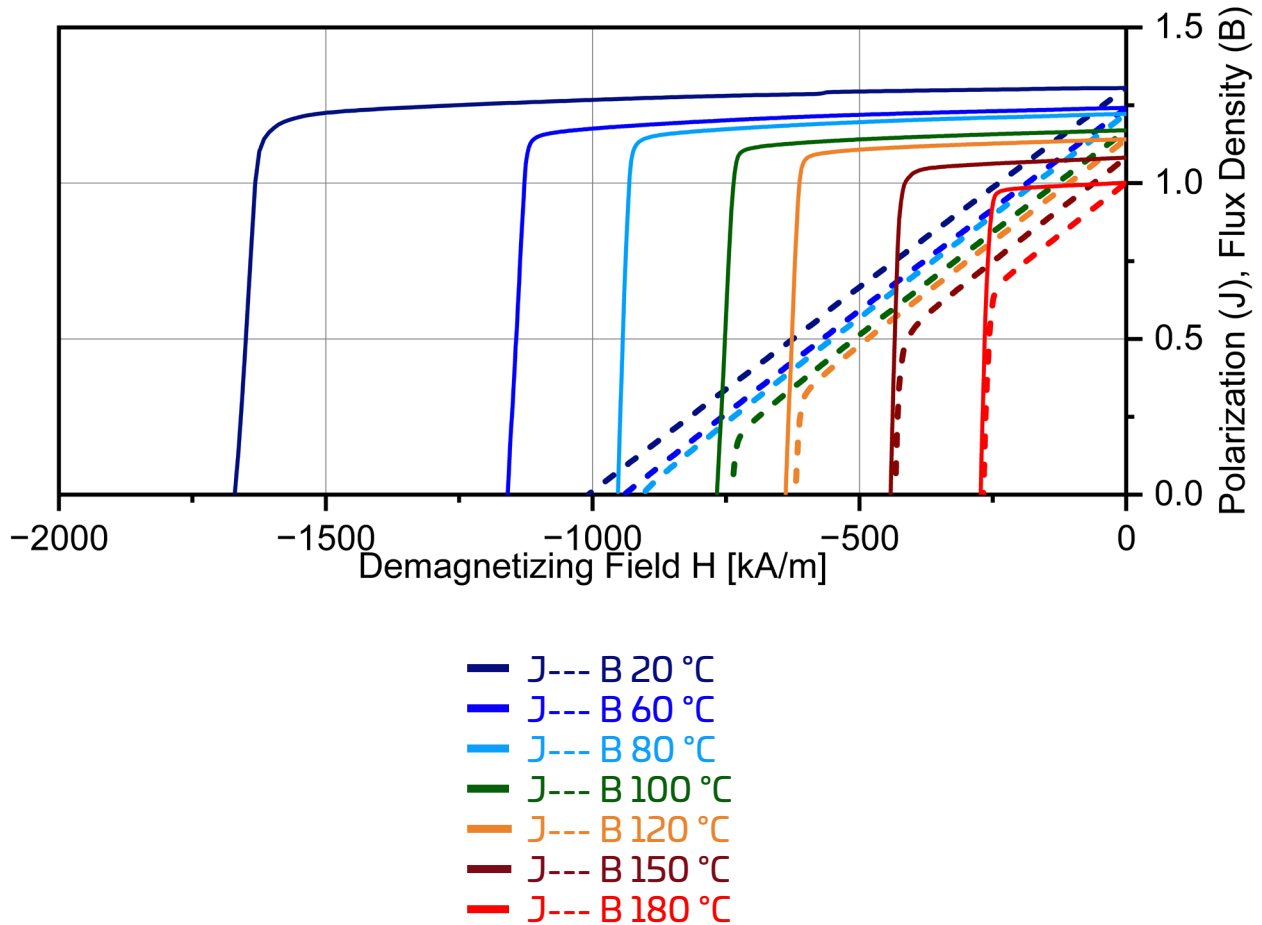


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
12.9 kG	12.3 kOe	21.9 kOe	40 MGOe	0.90
1.29 T	978 kA/m	1743 kA/m	315 kJ/m³	0.90

GKN 42SH

Permagraph Measurements at various temperatures

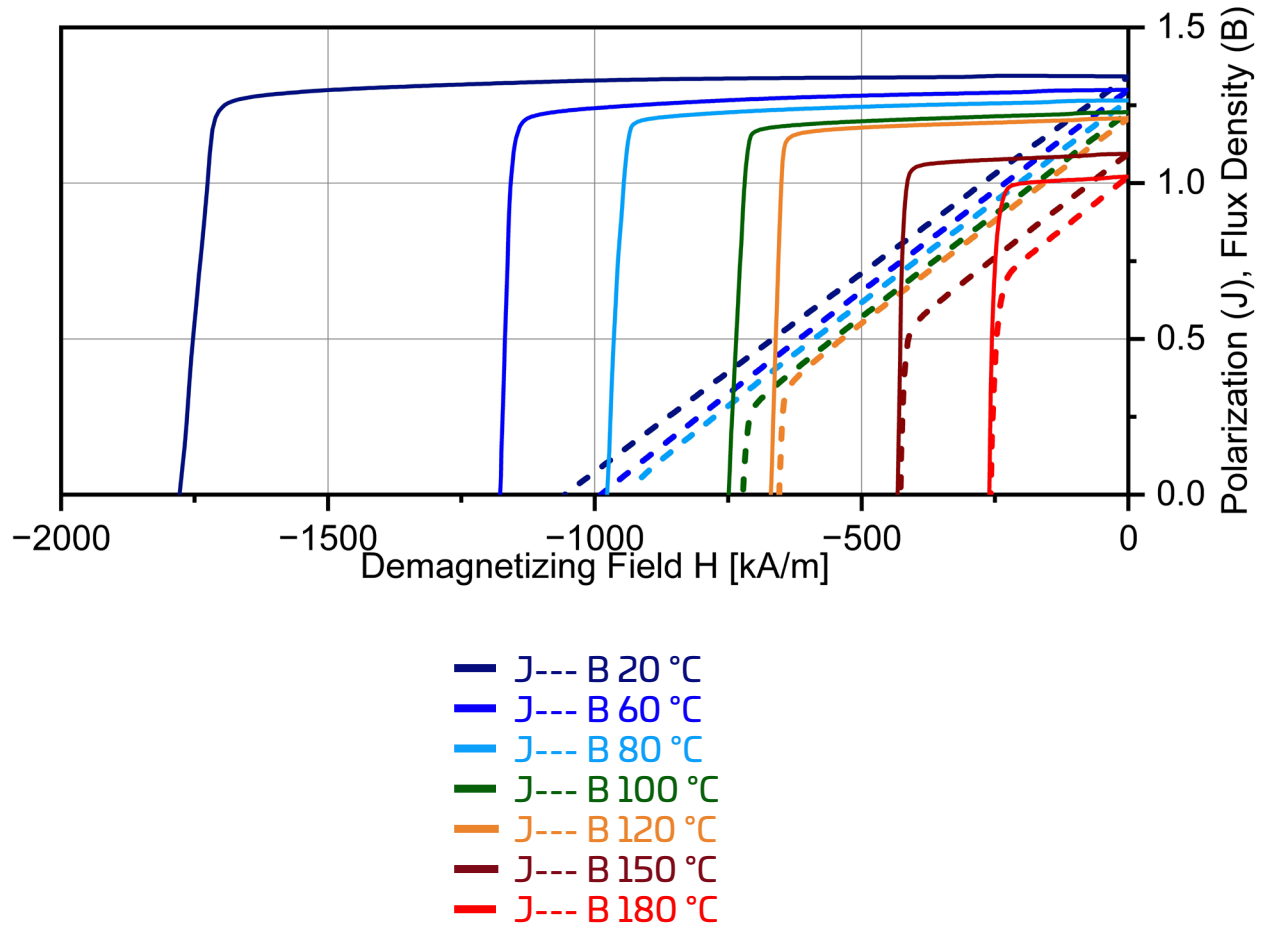


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.1 kG	12.7 kOe	21.0 kOe	42 MGOe	0.96
1.31 T	1008 kA/m	1671 kA/m	333 kJ/m ³	0.96

GKN 45SH

Permagraph Measurements at various temperatures

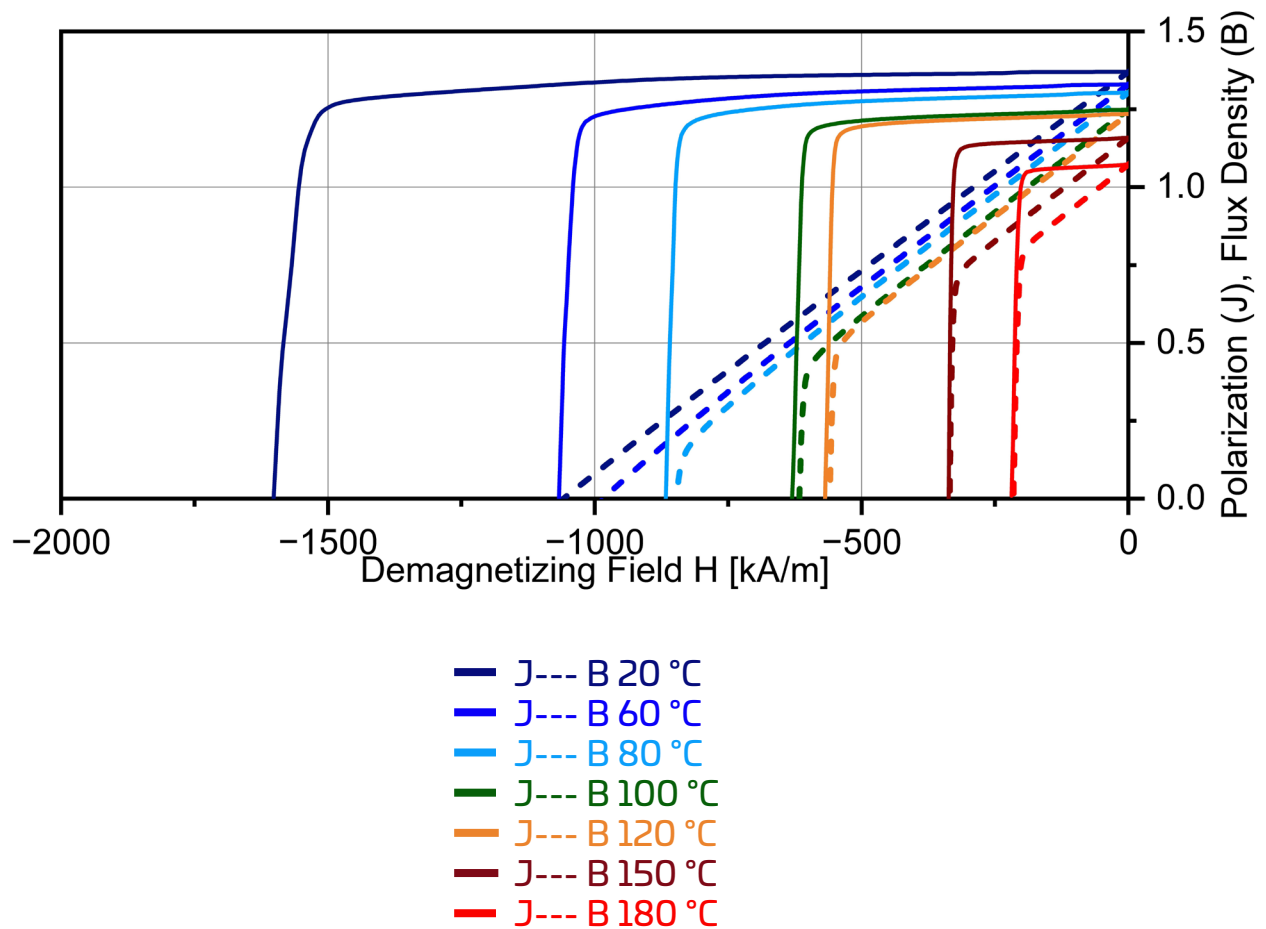


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.4 kG	13.3 kOe	22.3 kOe	45 MGOe	0.96
1.34 T	1056 kA/m	1778 kA/m	356 kJ/m ³	0.96

GKN 48SH

Permagraph Measurements at various temperatures

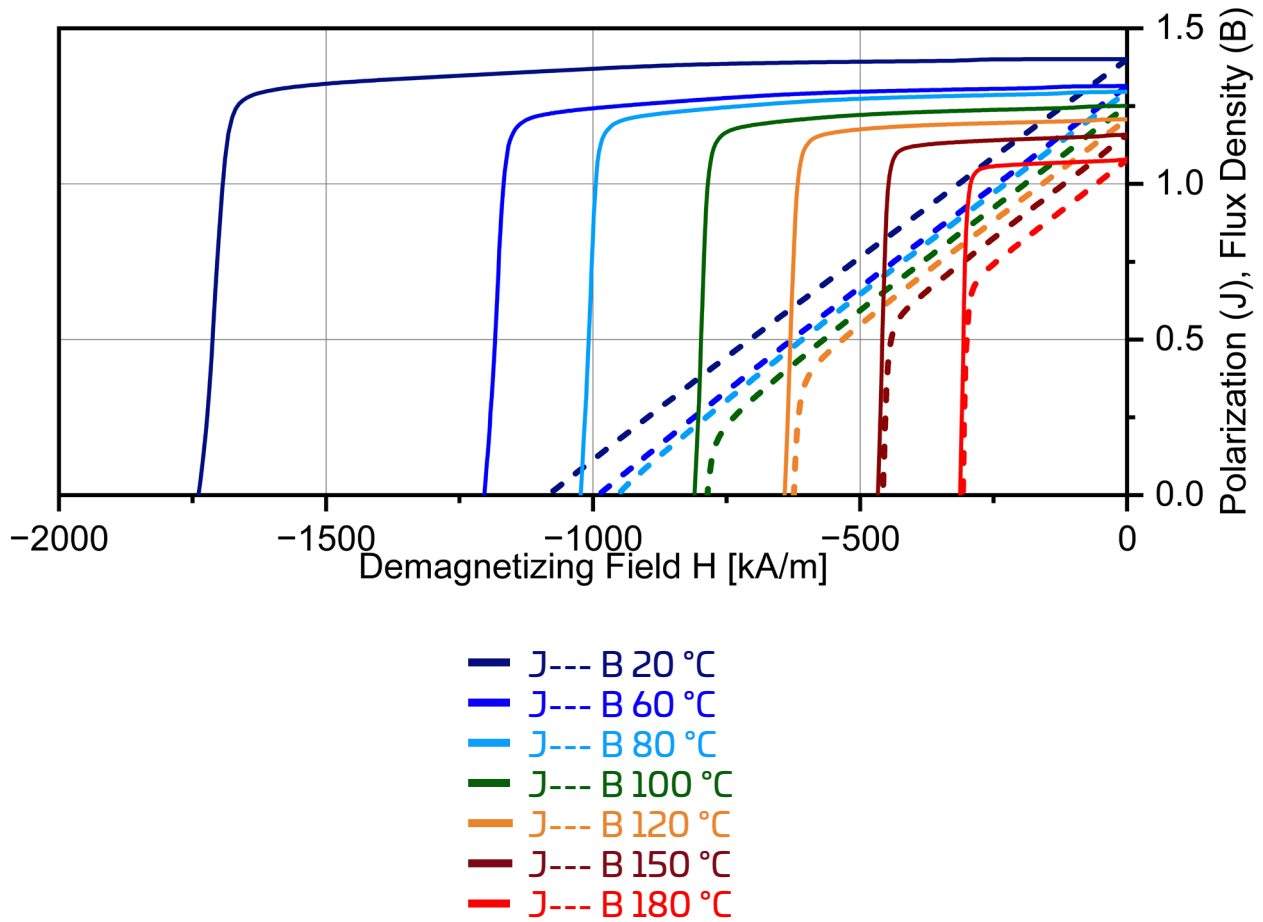


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.7 kG	13.3 kOe	21.1 kOe	46 MGOe	0.95
1.37 T	1059 kA/m	1602 kA/m	368 kJ/m ³	0.95

GKN 50SH

Permagraph Measurements at various temperatures

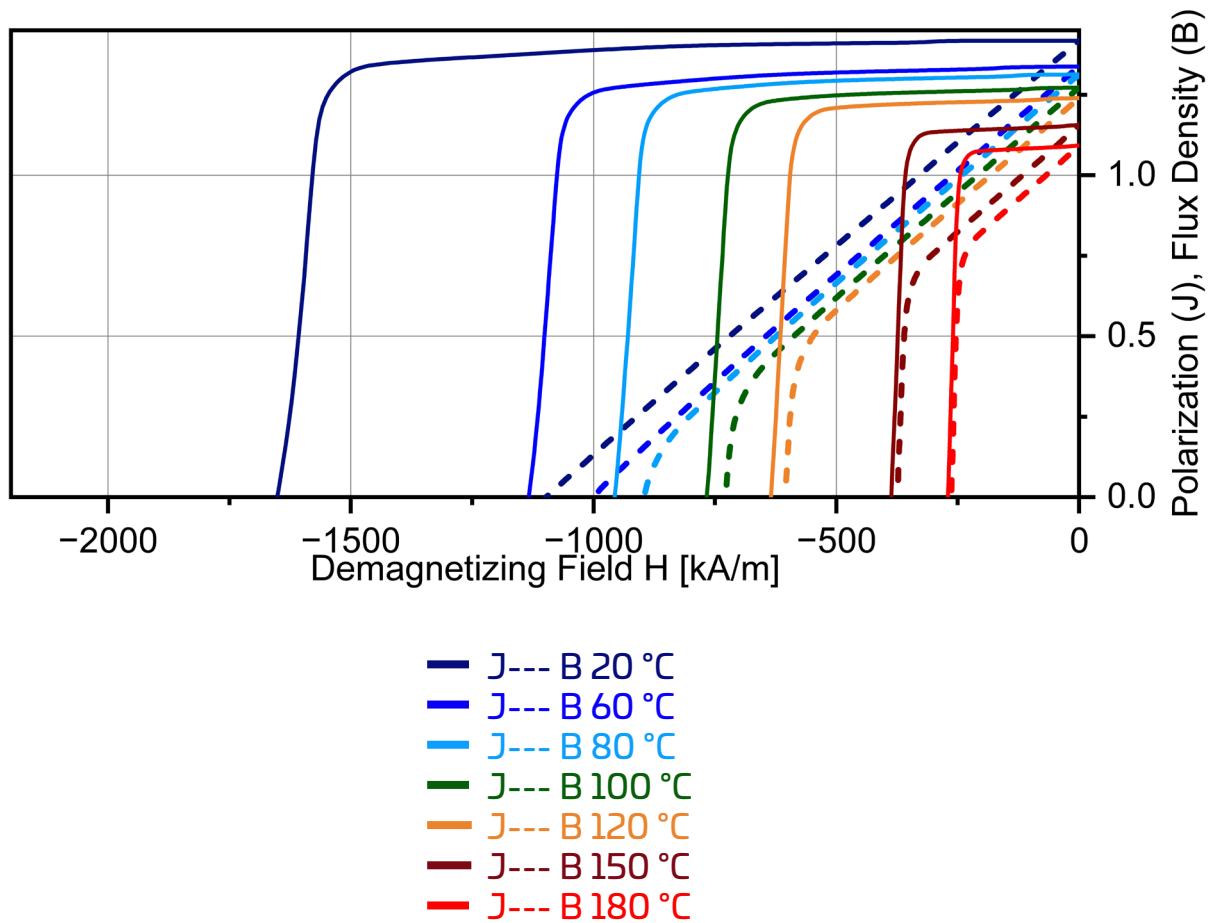


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
14.0 kG	13.7 kOe	21.6 kOe	49 MGOe	0.96
1.40 T	1086 kA/m	1718 kA/m	387 kJ/m ³	0.96

GKN 52SH

Permagraph Measurements at various temperatures

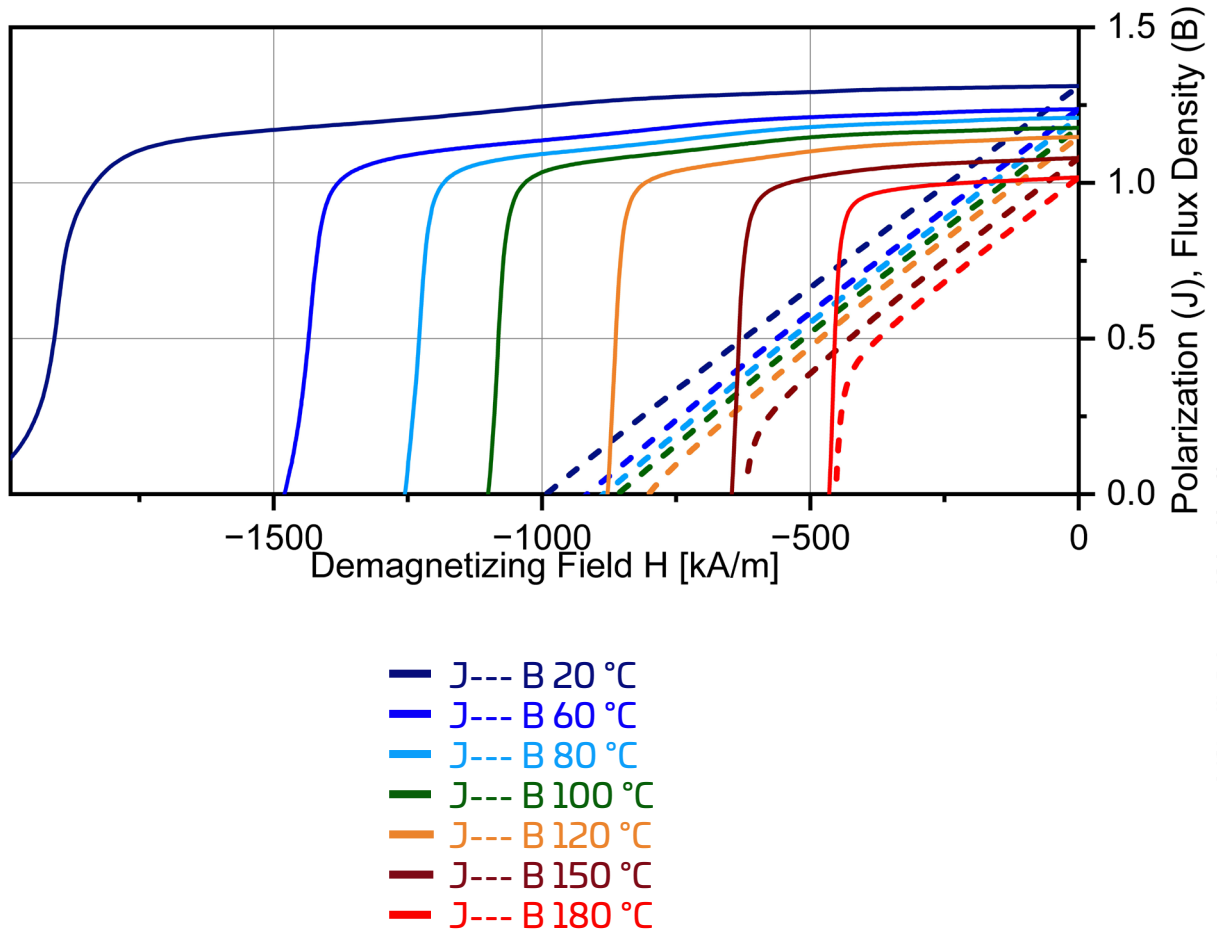


Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
14.2 kG	13.8 kOe	20.7 kOe	50 MGOe	0.93
1.42 T	1098 kA/m	1651 kA/m	395 kJ/m ³	0.93

GKN 42UH

Permagraph Measurements at various temperatures



Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.1 kG	12.5 kOe	>25 kOe	42 MGOe	*
1.31 T	992 kA/m	>1990 kA/m	333 kJ/m ³	*

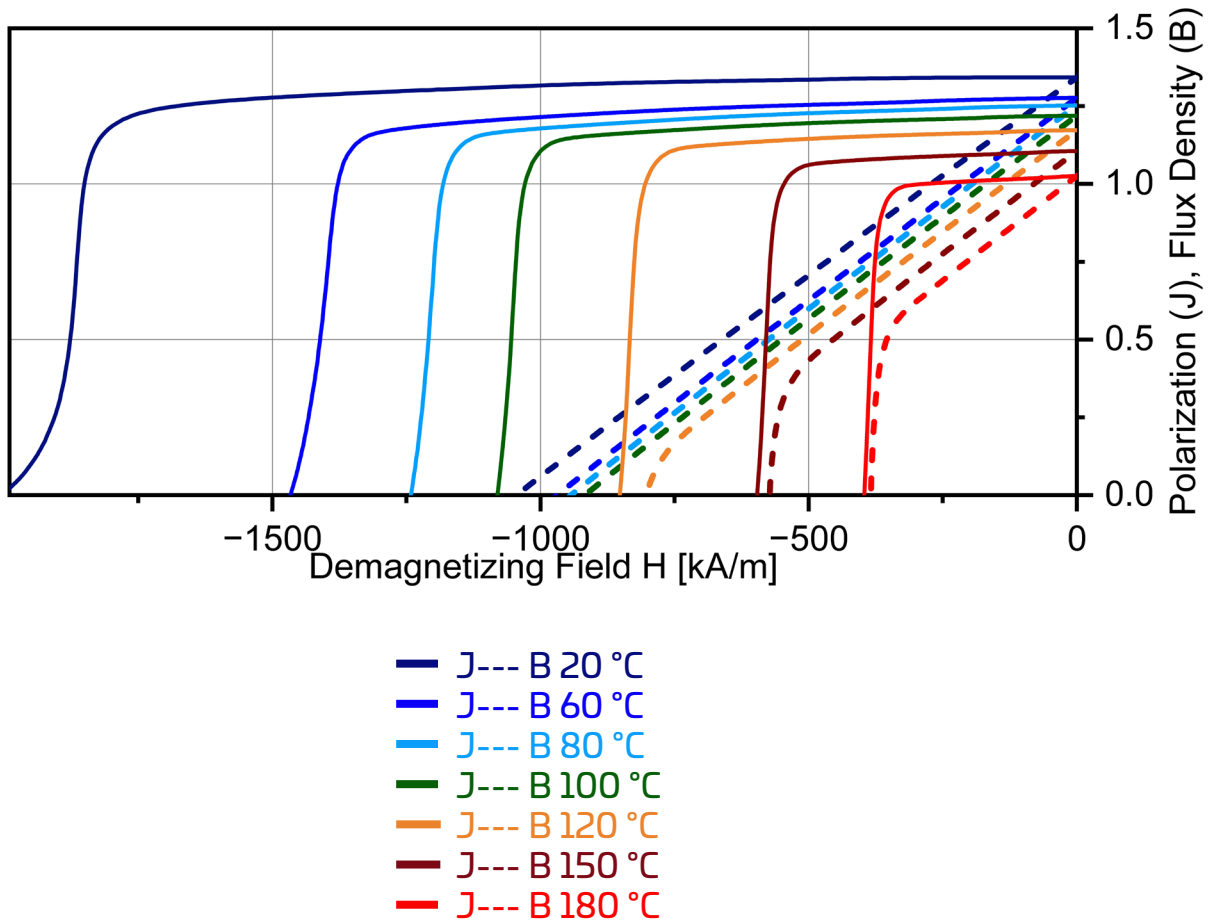
* H_{Kn}/H_{cJ} at 150 °C = 0.91

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GKN 45UH

Permagraph Measurements at various temperatures



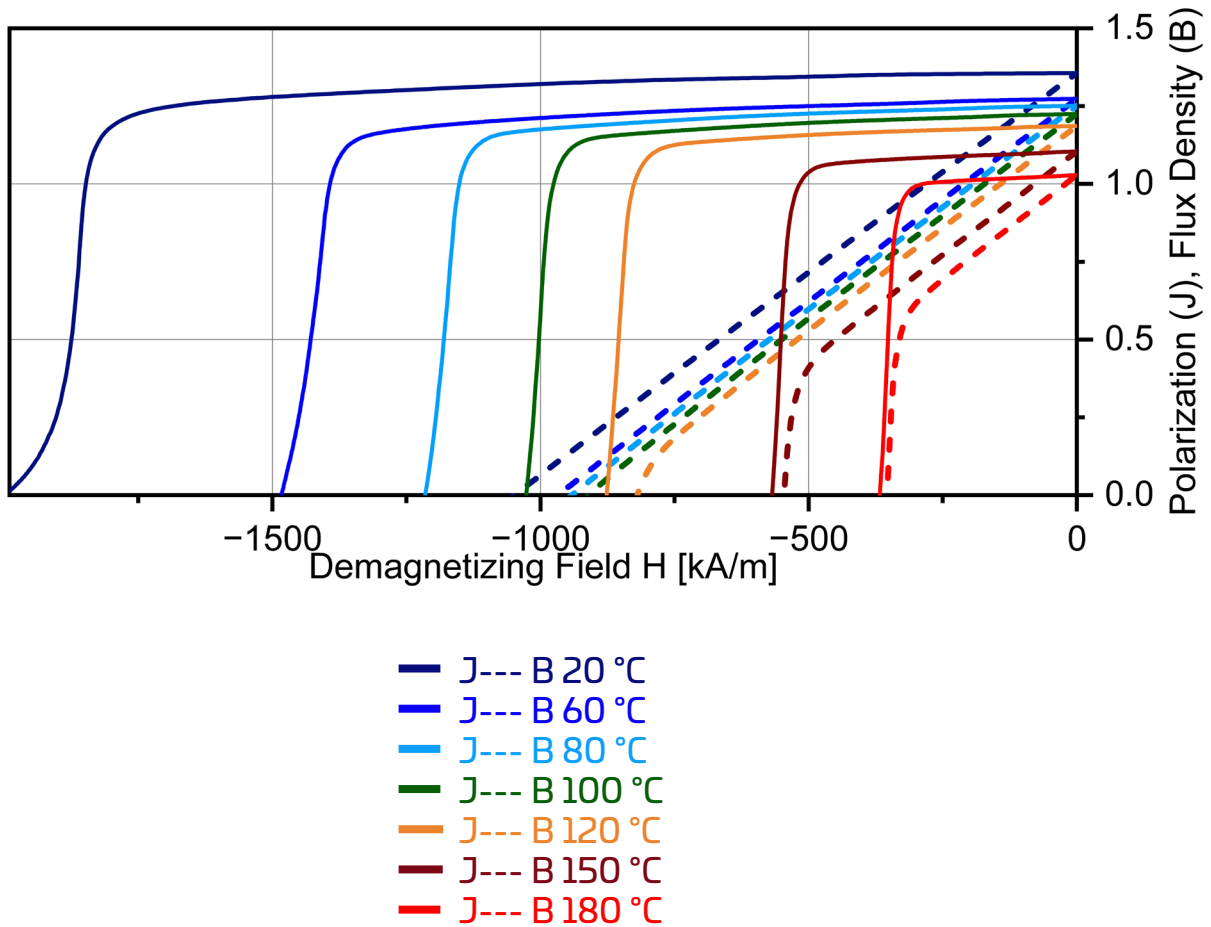
Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.4 kG	13.1 kOe	>25 kOe	44 MGOe	*
1.34 T	1045 kA/m	>1990 kA/m	354 kJ/m ³	*

* H_{Kn}/H_{cJ} at 150 °C = 0.91

GKN 48UH

Permagraph Measurements at various temperatures



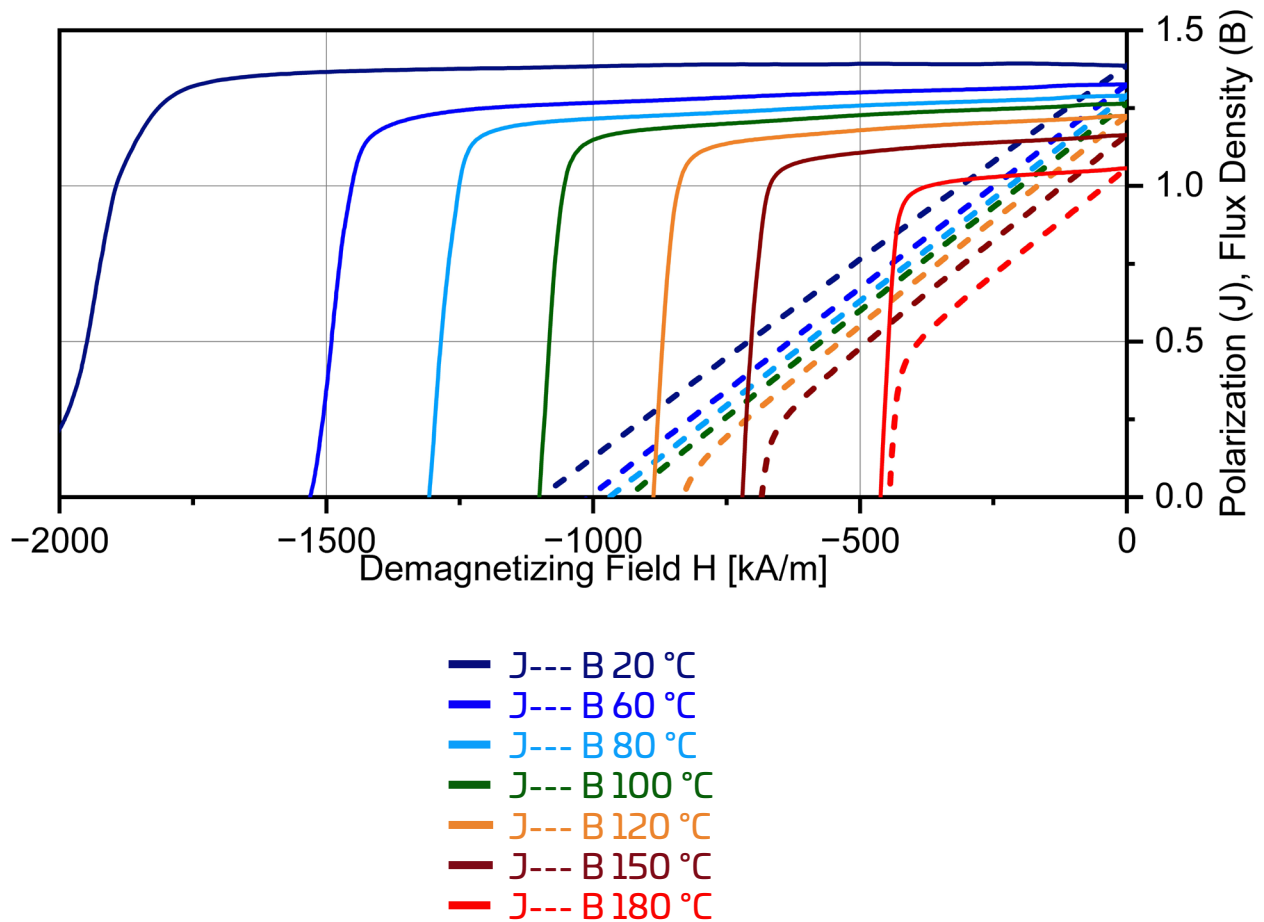
Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.6 kG	13.3 kOe	>25 kOe	45 MGOe	*
1.36 T	1049 kA/m	>1990 kA/m	359 kJ/m ³	*

* H_{Kn}/H_{cJ} at 150 °C = 0.91

GKN 50UH

Permagraph Measurements at various temperatures



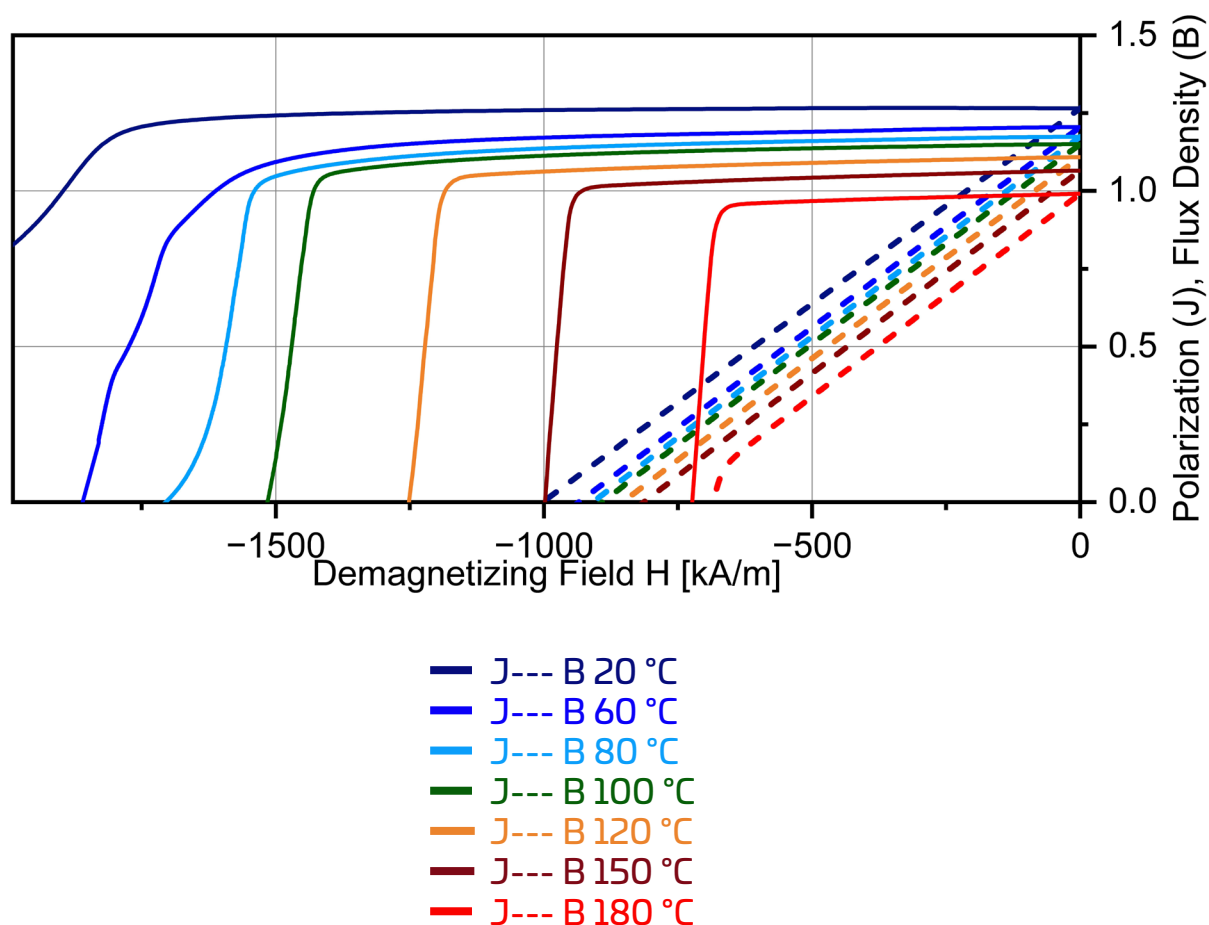
Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.9 kG	13.8 kOe	>25 kOe	48 MGOe	*
1.39 T	1099 kA/m	>1990 kA/m	385 kJ/m ³	*

* H_{Kn}/H_{cJ} at 150 °C = 0.90

GKN 40EH

Permagraph Measurements at various temperatures



Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
12.7 kG	12.6 kOe	>30 kOe	40 MGOe	*
1.27 T	1002 kA/m	>2400 kA/m	319 kJ/m ³	*

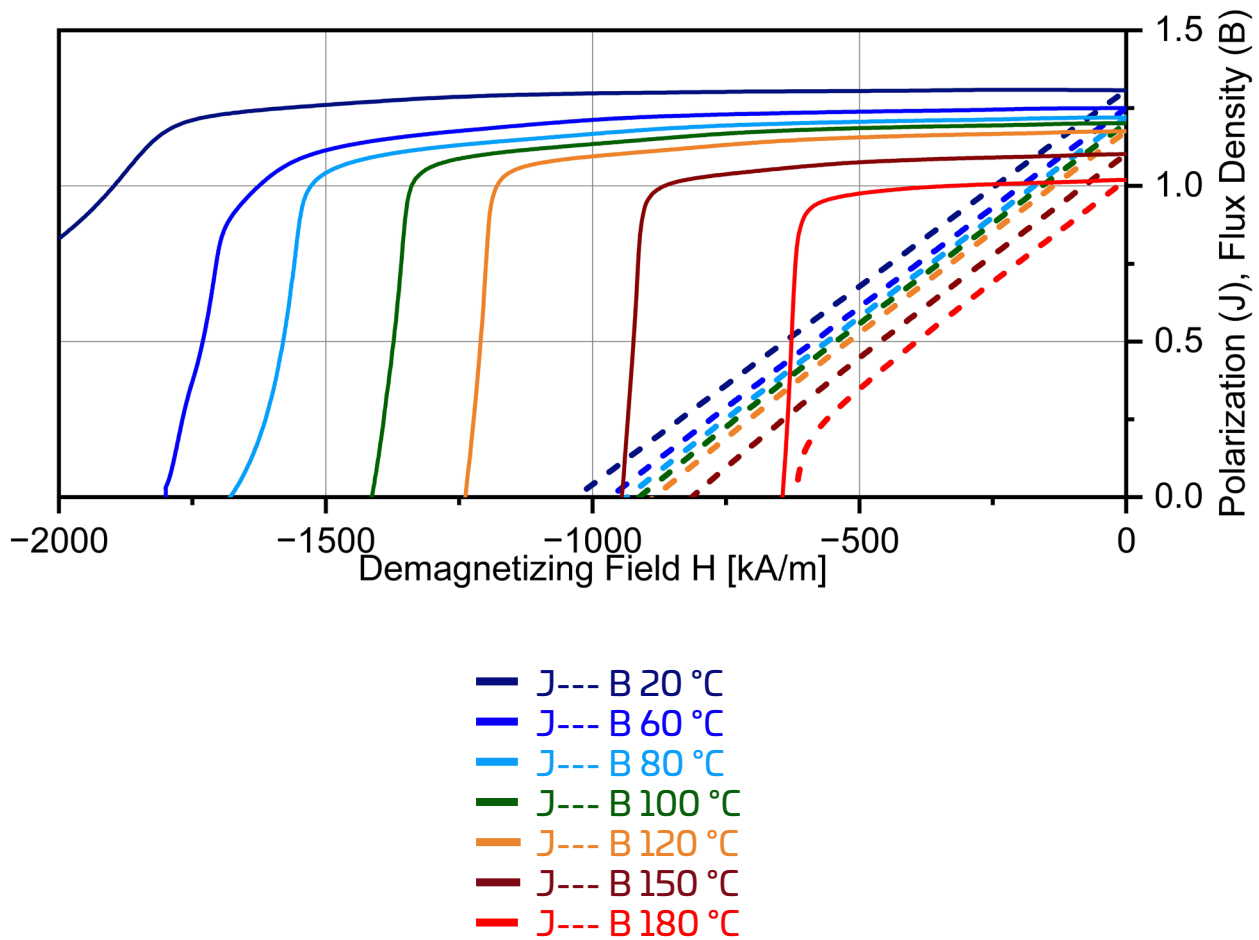
* H_{Kn}/H_{cJ} at 150 °C = 0.94

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GKN 42EH

Permagraph Measurements at various temperatures



Summary of Results at Room Temperature

B_r	H_{cB}	H_{cJ}	$(BH)_{max}$	H_{Kn}/H_{cJ}
13.1 kG	13.0 kOe	>30 kOe	43 MGOe	*
1.31 T	1032 kA/m	>2400 kA/m	339 kJ/m ³	*

* H_{Kn}/H_{cJ} at 150 °C = 0.93

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