APPLIED SUPERCONDUCTIVITY CENTER
NATIONAL HIGH MAGNETIC FIELD LABORATORY
FLORIDA STATE UNIVERSITY

ARDAP Wires
PMM240205-07 and PMM240325-07

Shaon Barua

D.S. Davis, J. Jiang, Y. Kim, S. Barua, C. Linville, E.C. Martin, U. P. Trociewitz,
E. Hellstrom, D.C. Larbalestier, T. Shen (LBNL)

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Short and barrel samples were heat treated at T_{max} = 888° C

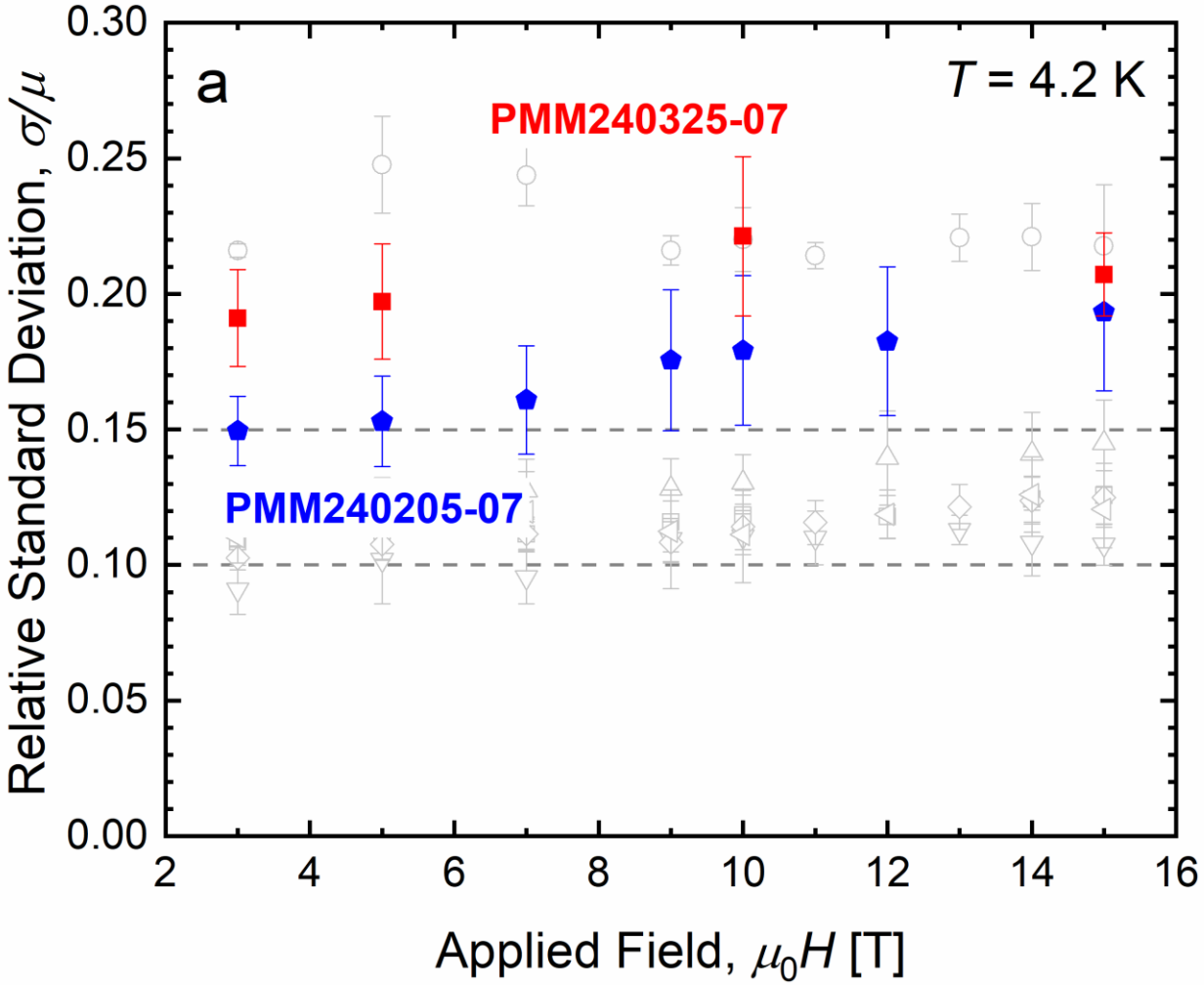
Table 1: Specifications of the Bi-2212 wire used in this study

Wire Parameter*	**Specification**	
Bruker-OST billet number	PMM240205-07	PMM240325-07
Filament architecture	37×18	37×18
As-received nominal wire diameter	$\varnothing 0.7$ mm	$\varnothing 0.7$ mm
Average filament diameter†	(12.6 ± 1) µm	(12.9 ± 0.9) µm
Average minimum filament separation	(2.7 ± 0.9) µm	(2.6 ± 0.7) µm
Diameter after pre-densification	0.675 mm	0.675 mm
Filling factor after pre-densification‡	23.1%	24.4%
J_c(5 T, 4.2 K)	4045 A/mm^2	3610 A/mm^2
J_E(5 T, 4.2 K)	934 A/mm^2	880 A/mm^2
n	16.7	14.6
H_K(20 K)	8.97 T	8.52 T

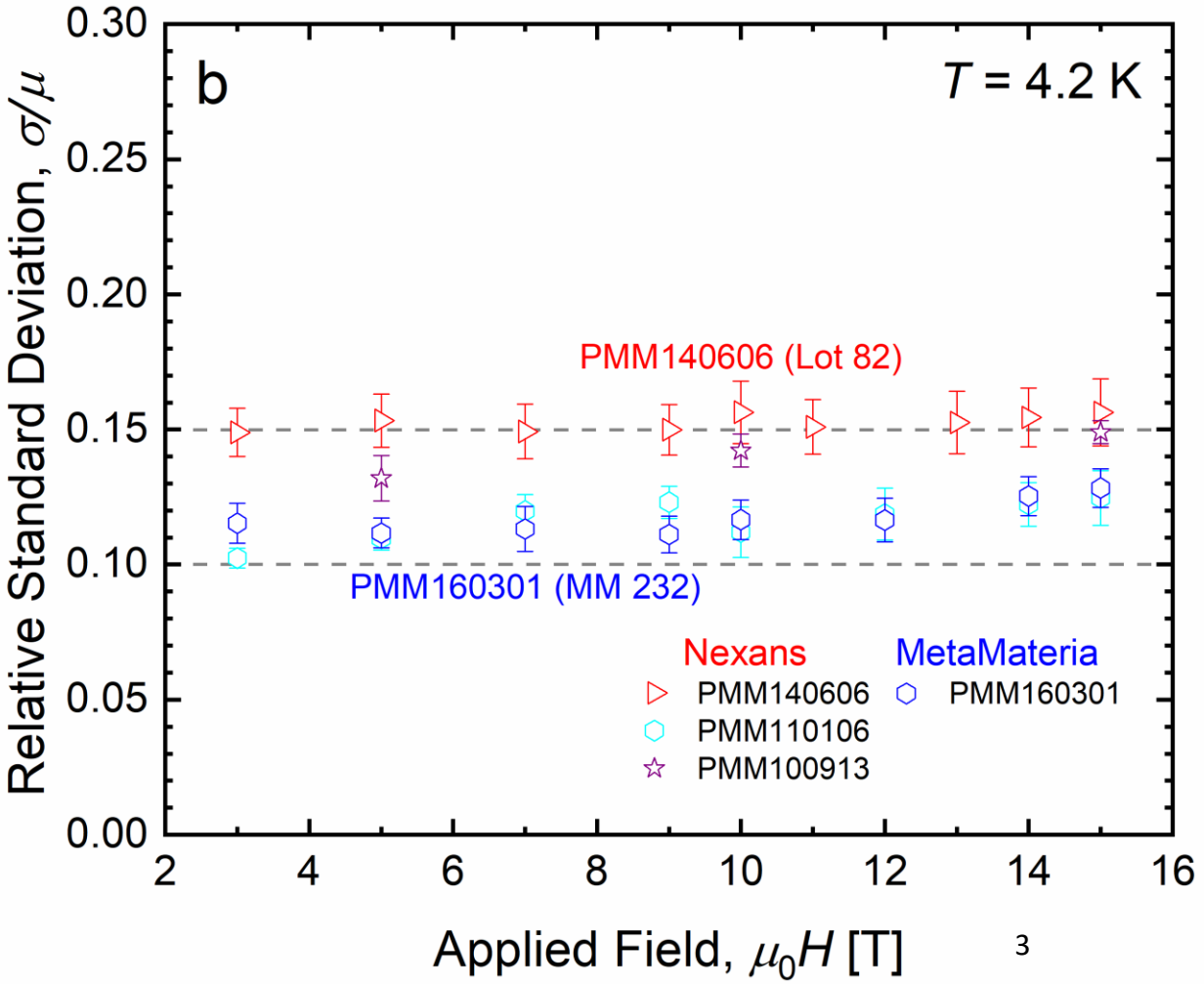
Both wires did not leak after 50 bar OPHT!!

d^2V/dI^2: σ/μ (5 T, 4.2 K) of PMM250205-07 is ~15.3%

Engi-Mat

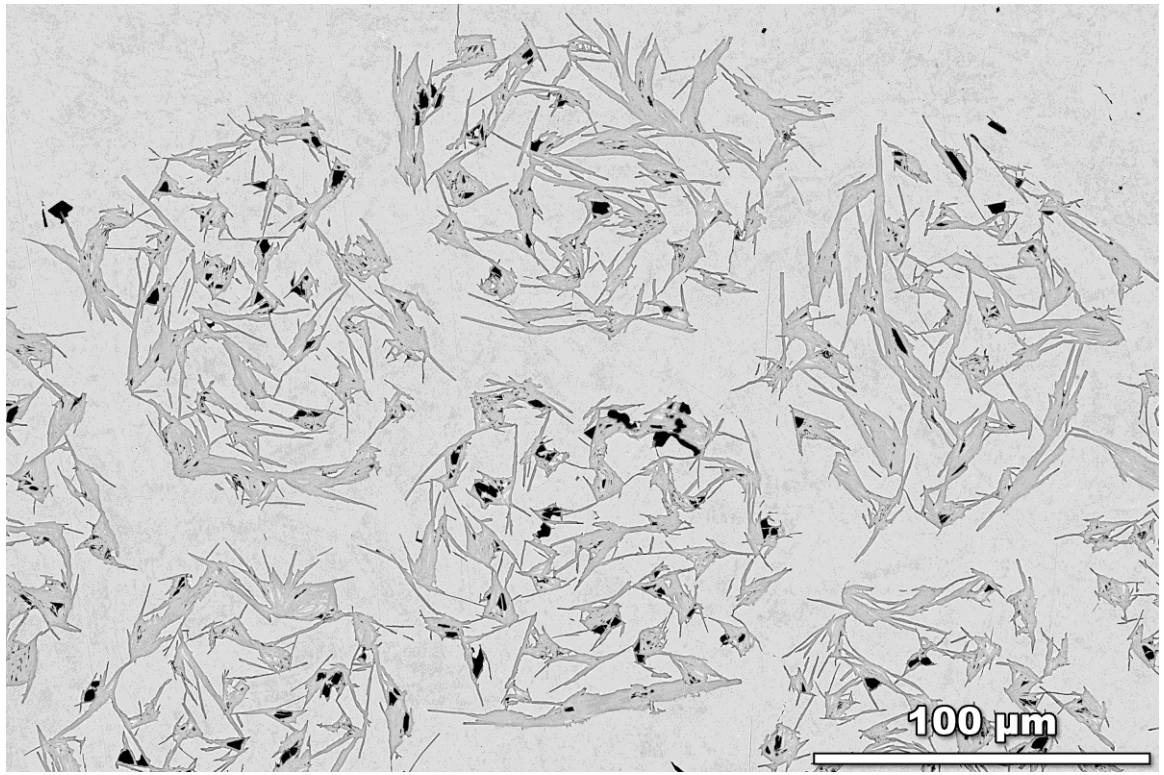


Nexans and MetaMateria



Filament bridging is high

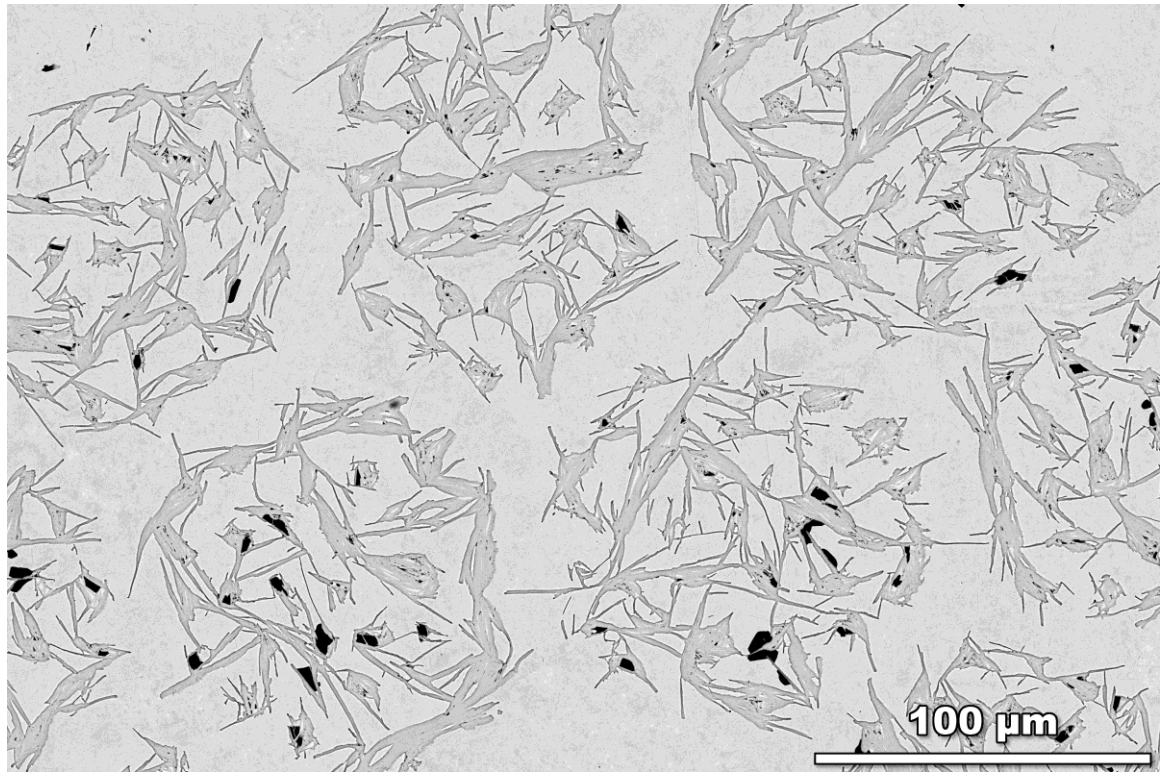
PMM240205-07



J_c (5 T, 4.2 K) = 4045 A/mm^2

J_E (5 T, 4.2 K) = 934 A/mm^2

PMM240325-07

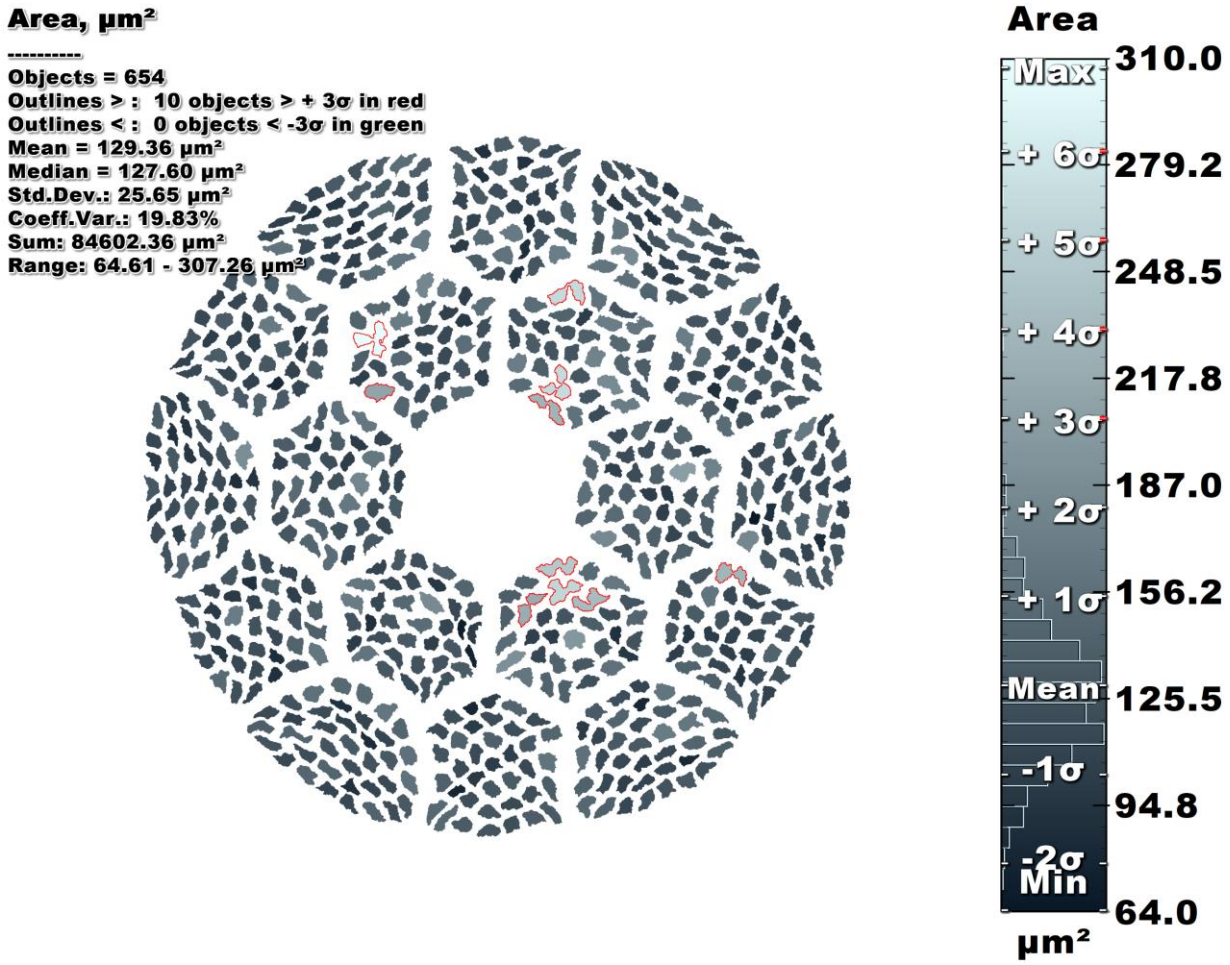


J_c (5 T, 4.2 K) = 3610 A/mm^2

J_E (5 T, 4.2 K) = 880 A/mm^2

Densified wire before full OPHT

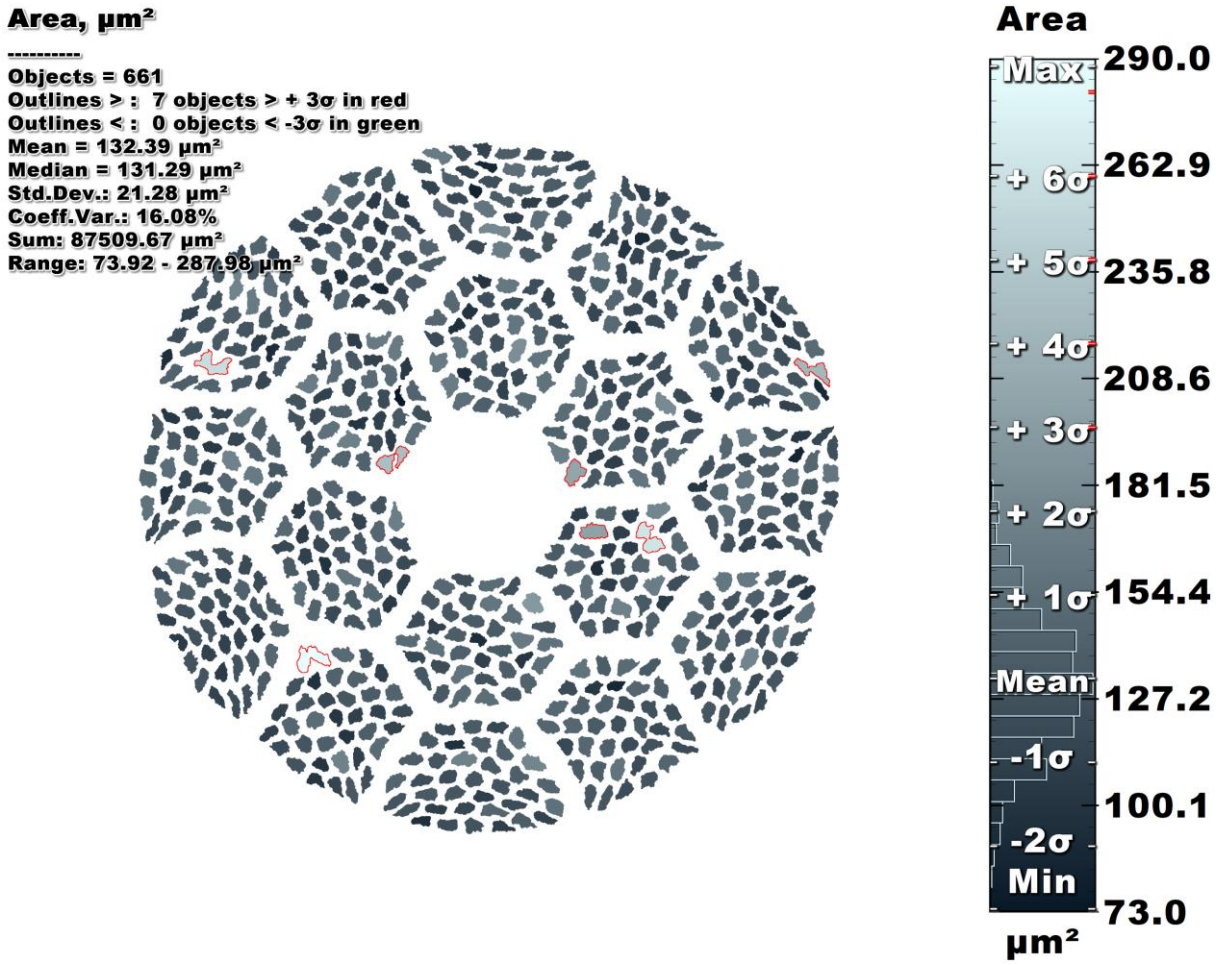
PMM240205-07



J_E (5 T, 4.2 K) = 934 A/mm²

Area σ/μ = 19.83%

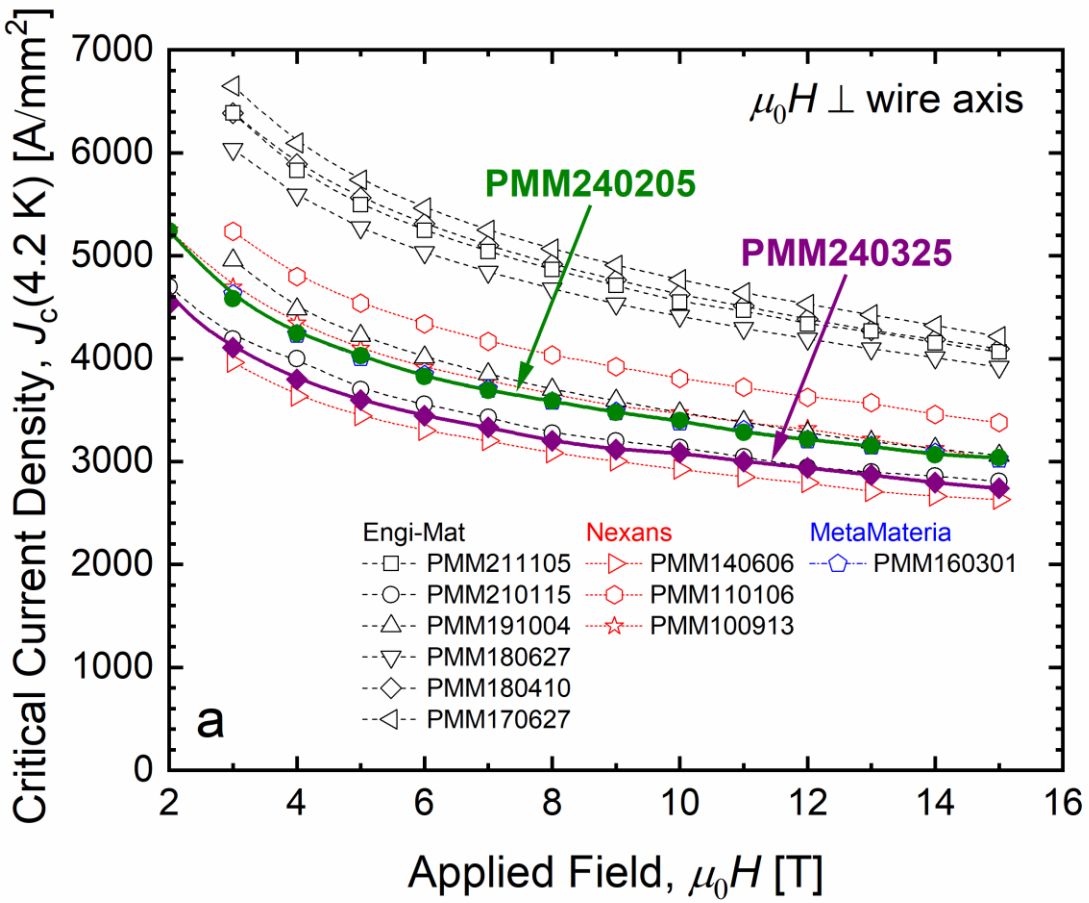
PMM240325-07

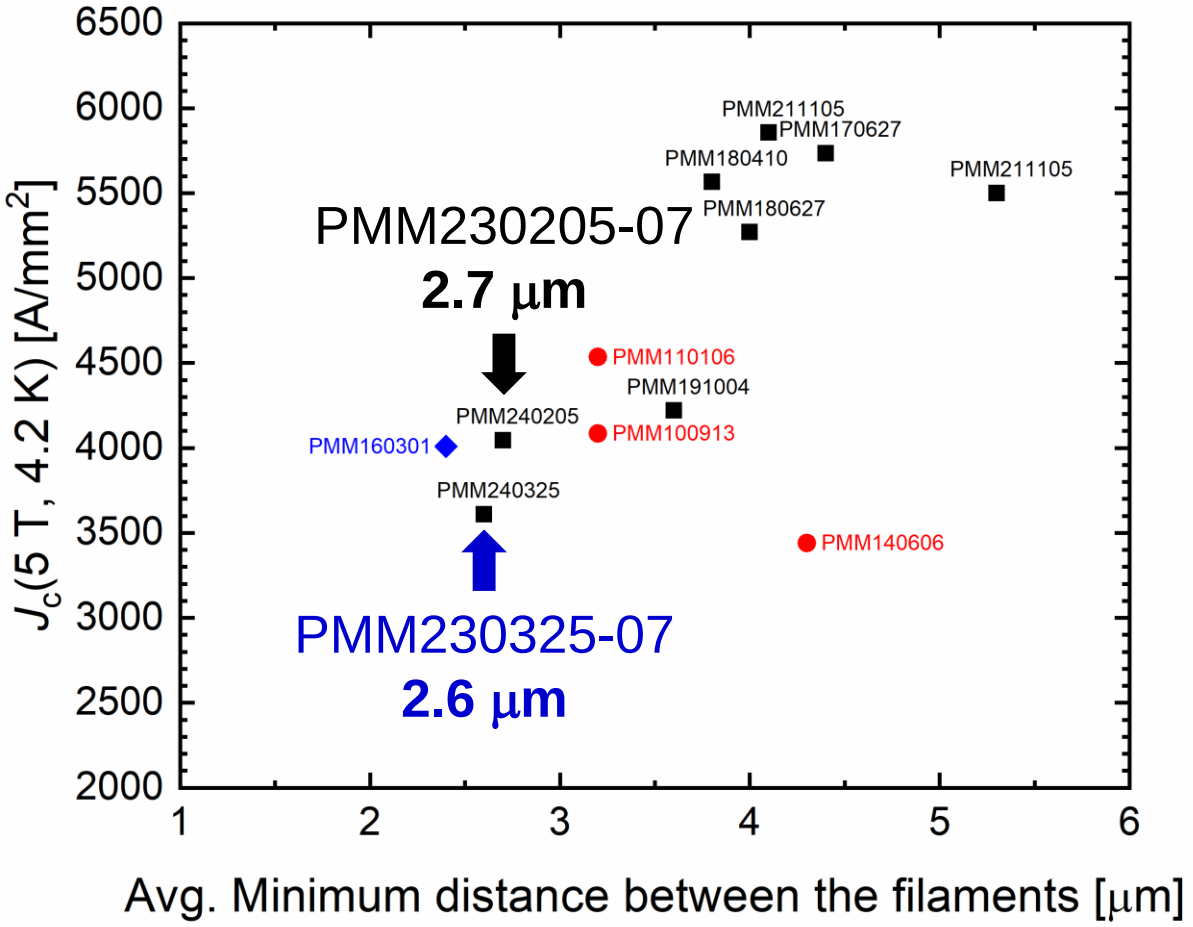


J_E (5 T, 4.2 K) = 880 A/mm²

Area σ/μ = 16.08%

Performance of the both ARDAP wires are comparatively low, J_c(5 T, 4.2 K) ≤ 4045 A/mm^2





Low filament separation distance (< 3 μm) in both wires at Ø0.7 mm