Institute of Electrical Engineering SAS

Eugen SEILER

SC characterization at IEE Bratislava

IFAST WP9 Meet, 12 Feb 2025

IEE OVERVIEW

Sample Batches investigated:

Uni Siegen:

NbTiN films on **Si** substrate – *16.12.2024 series*

PPMS fully operational, disruption expected ≈ May-June

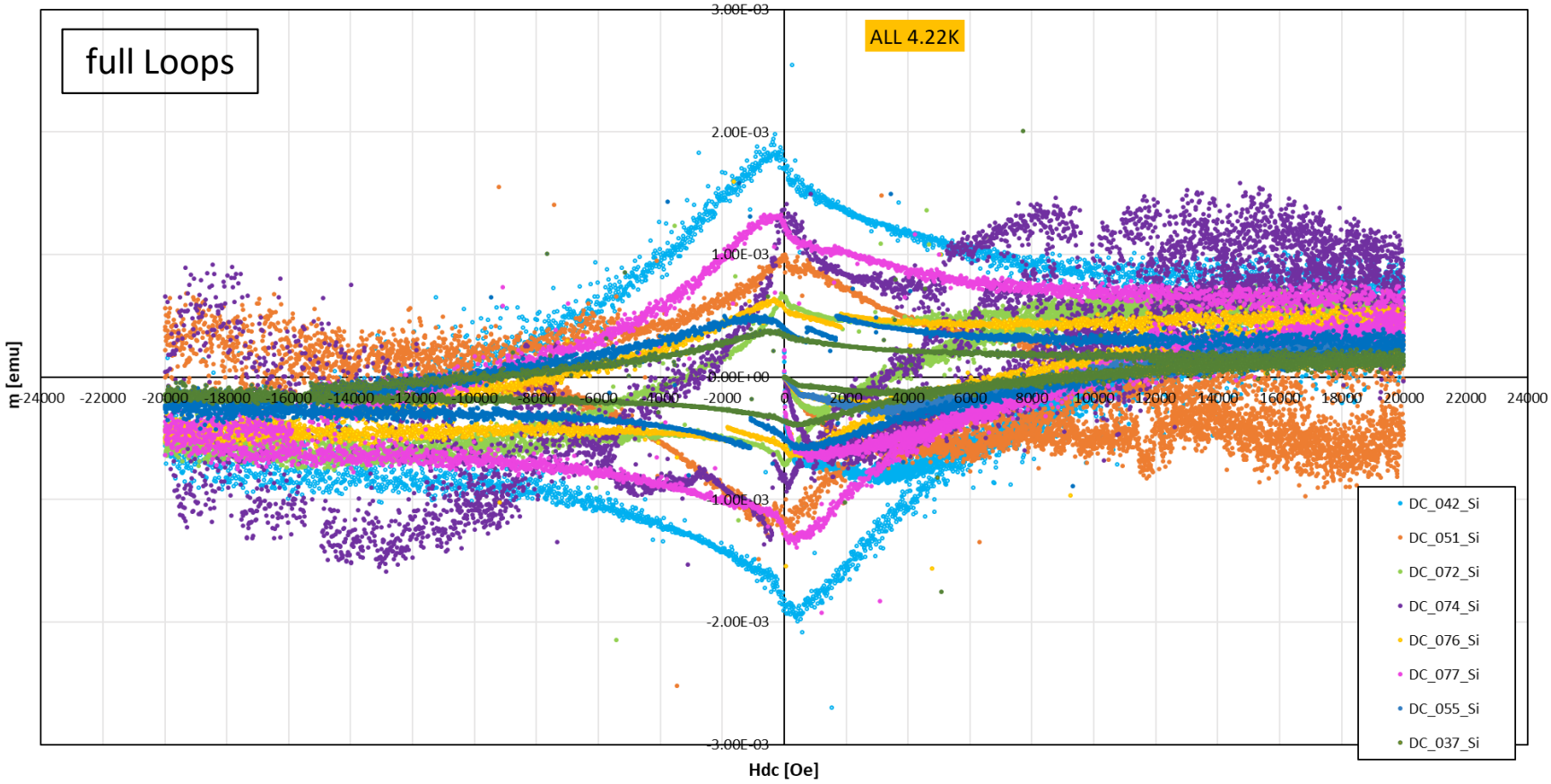
Cooling water circuit rework…

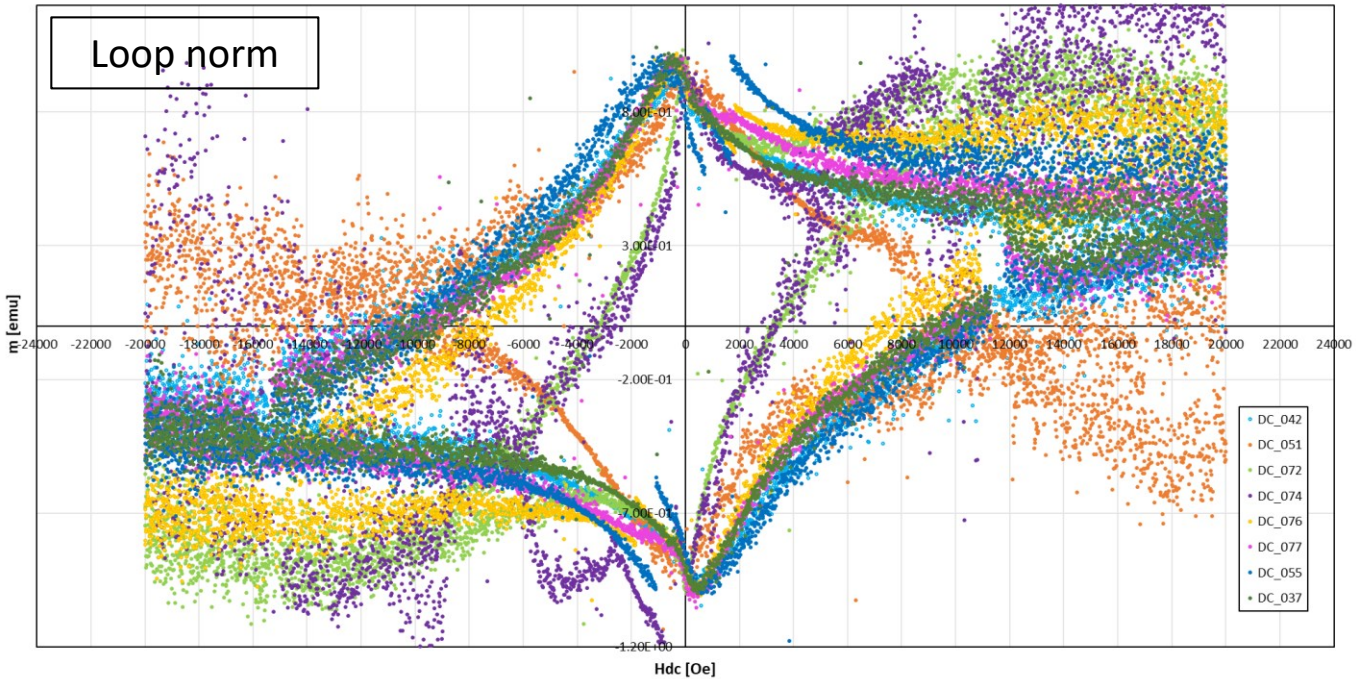
Table-summary

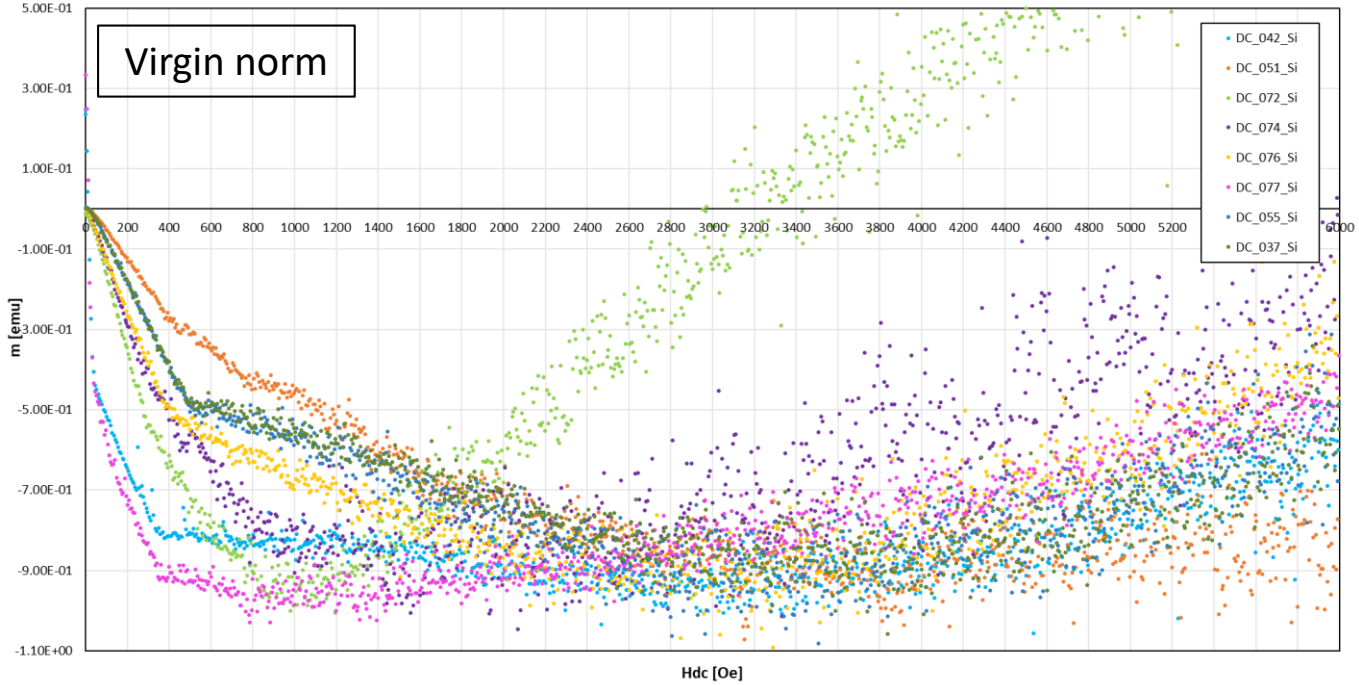
	Sample	Ben [Oe] (2% crit. at 4.22 K)		Tc [K]			Ben [Oe]			
		Perpend	Parallel			Sample	perp.	Parallel	Tc [K]	
NbTiN	DC_042		25	14.5		DC_042_recentre		35	14.5	
Substrate: Si	DC_051		150	14.4	Pinning	DC_051_recentre		900	14.4	Pinning
	DC_072		320	11.7	Pinning	DC_072_recentre		500	11.7	Pinning
UNI Siegen	DC_074		230	10.6	Pinning	DC_074_recentre		670	10.9	Pinning
16.12.2024 series	DC_076		390	13.8	Pinning	DC_076_recentre		750	14.15	Pinning
	DC_077		24	14.6		DC_077_recentre		22	14.6	
	DC_055		500	14.25	Pinning	DC_055_recentre		770	14.25	Pinning
	DC_037		500	13.14	Pinning	DC_037_recentre		830	13.5	Pinning
Co-MgB2, on Si										
Uni Siegen, 16.12.2024 series	Co-MB_03		not SC	not SC						

Magnetization loops' Overview & Comparison

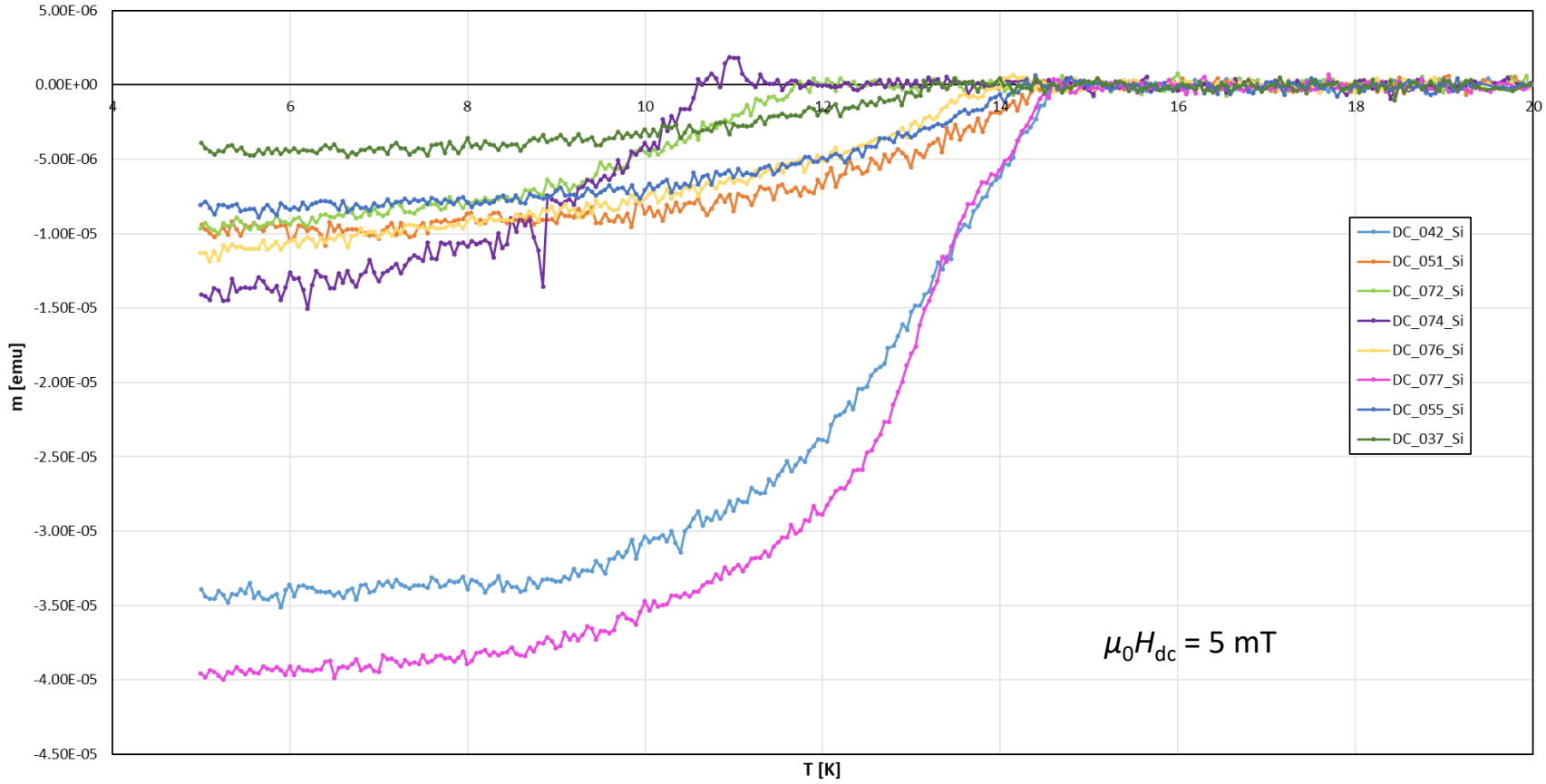
NbTiN / Si SiegenUni (16.12.2024 series)




Loop norm
m [emu]
Hdc [Oe]
DC_042
DC_051
DC_072
DC_074
DC_076
DC_077
DC_055
DC_037

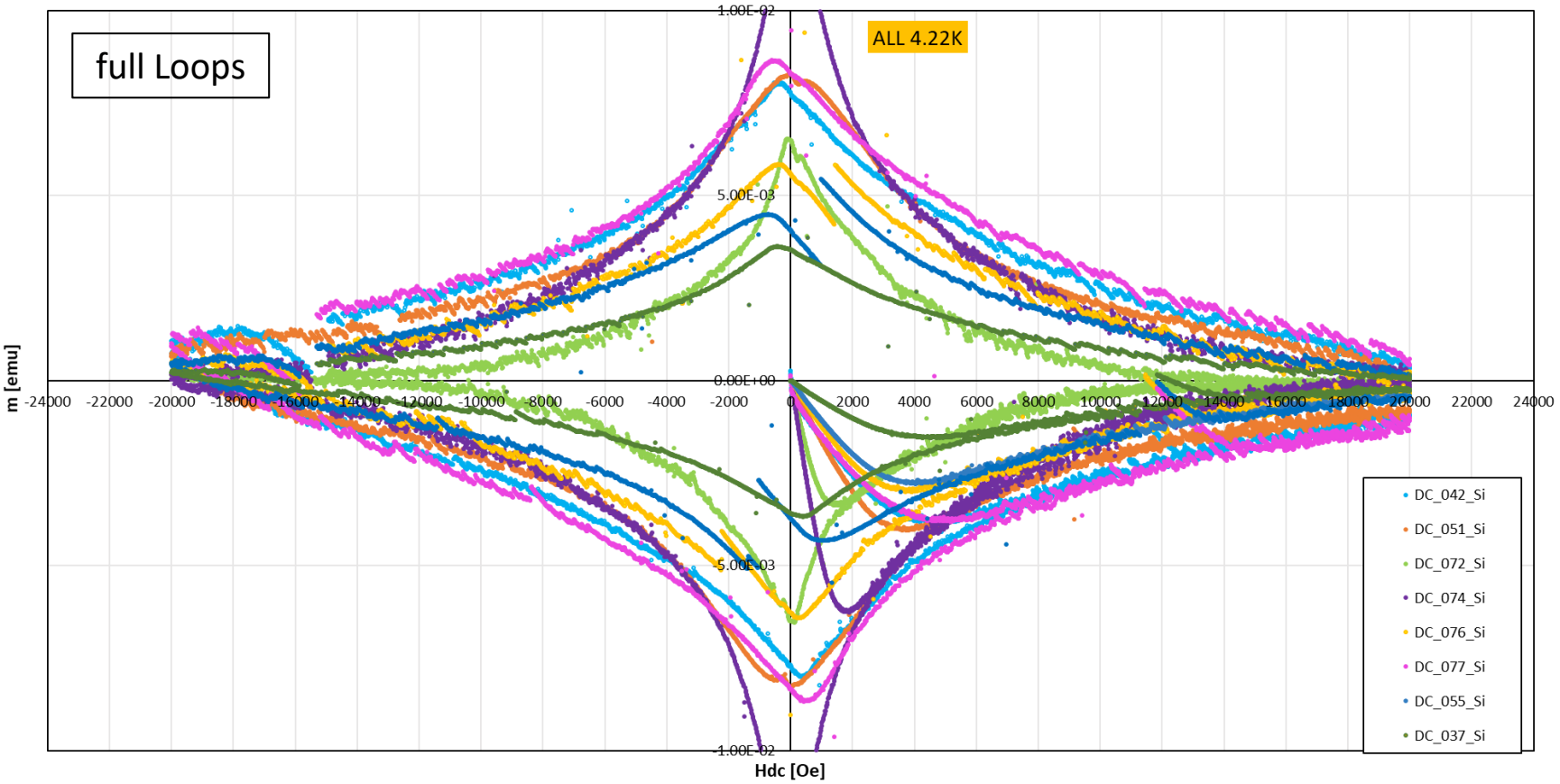

Virgin norm
m [emu]
Hdc [Oe]
DC_042_Si
DC_051_Si
DC_072_Si
DC_074_Si
DC_076_Si
DC_077_Si
DC_055_Si
DC_037_Si

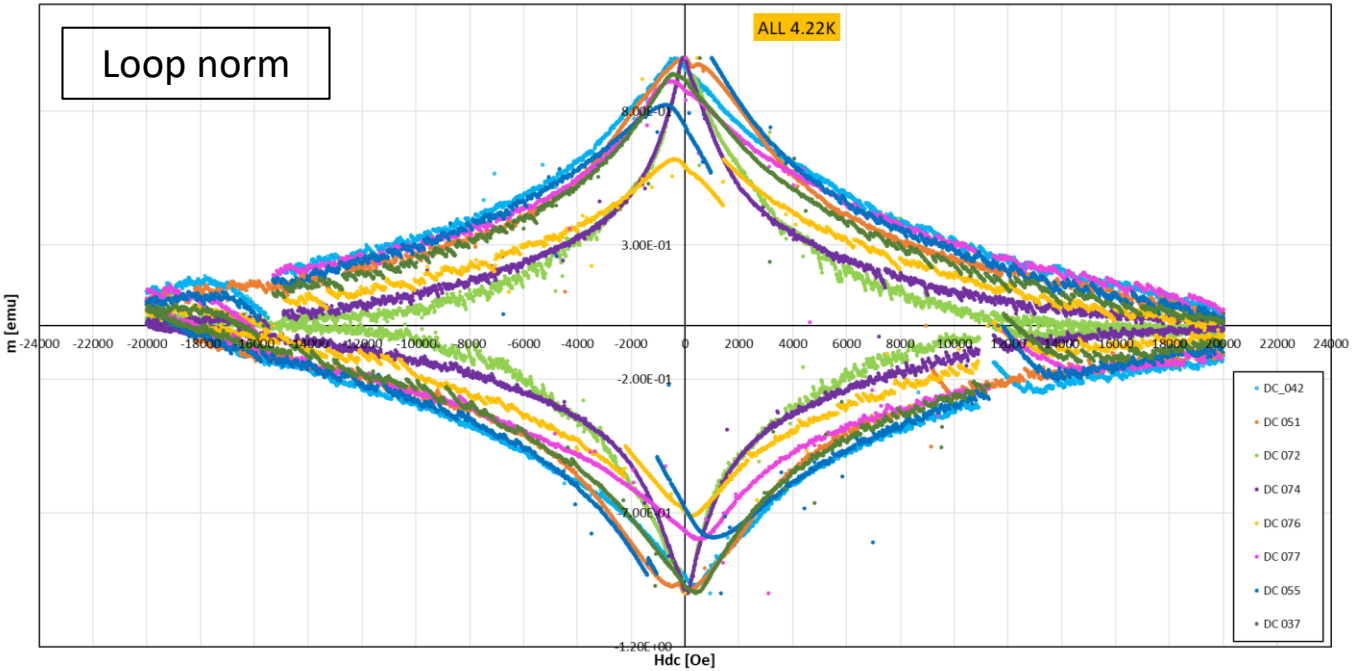
Temperature dependence $m(T)$

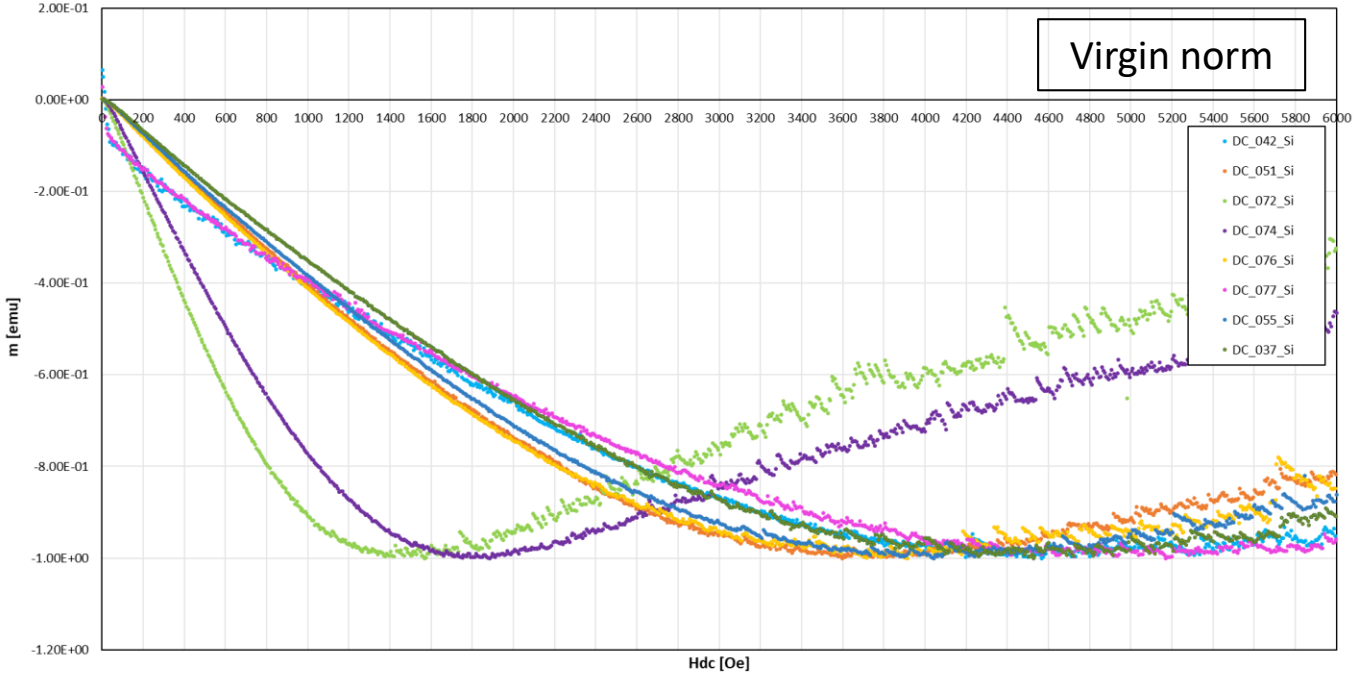


Thank you for your attention

Shifted centering of sample (‘recentre’)




Loop norm
ALL 4.22K
m [emu]
Hdc [Oe]
DC_042
DC 051
DC 072
DC 074
DC 076
DC 077
DC 055
DC 037


Virgin norm
m [emu]
Hdc [Oe]
DC_042_Si
DC_051_Si
DC_072_Si
DC_074_Si
DC_076_Si
DC_077_Si
DC_055_Si
DC_037_Si

Temperature dependence *m*(*T*) (recentre)