



Institute of Electrical Engineering SAS

Eugen SEILER, Rastislav RIES

# **SC characterization at IEE Bratislava**

# IEE OVERVIEW

## Sample Batches investigated since the last meeting (5.May.21):

*prepared at Siegen Uni:*

- NbN film selection on various substrates (Cu, Nb, Si, SS) – 22.6.2021 series

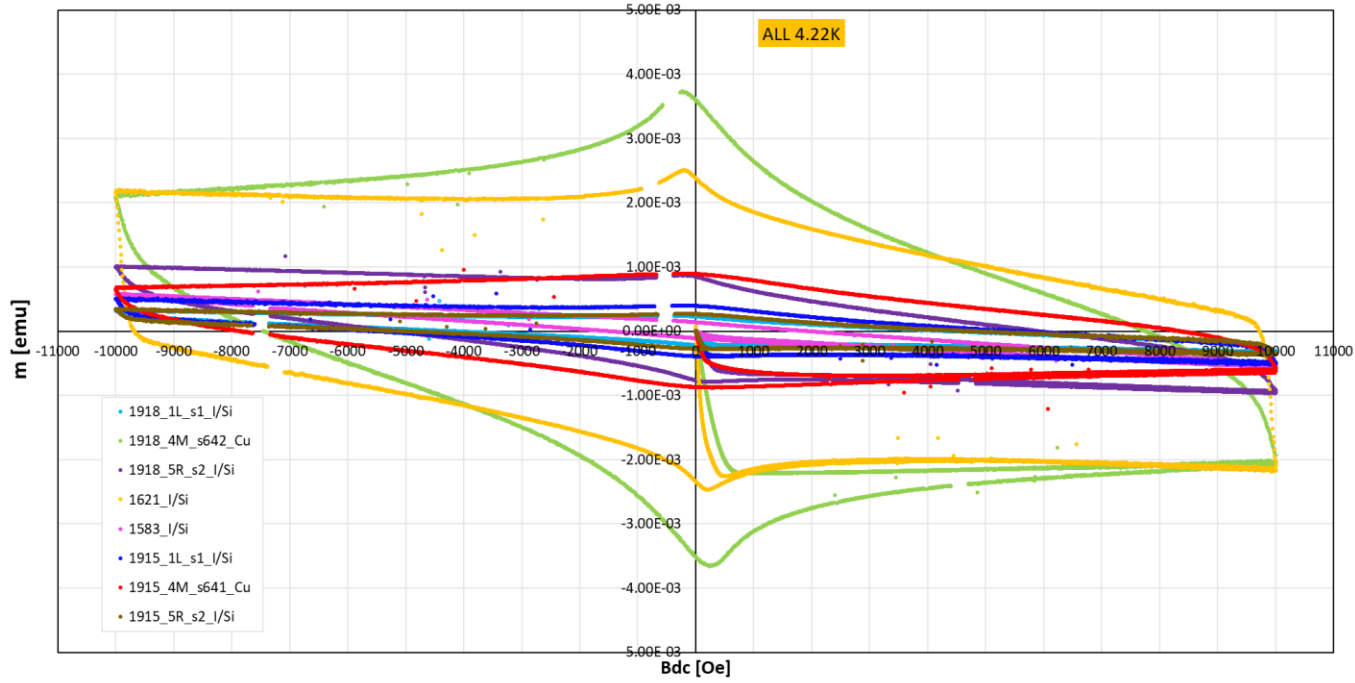
*prepared at STFC:*

- $V_3Si$  (HiPIMS) on Cu and 'non-Cu' sub. – 15.3.2021 (1) series
- Nb (HiPIMS, DCMS) on Cu and 'non-Cu' sub. – 15.3.2021 (2) series

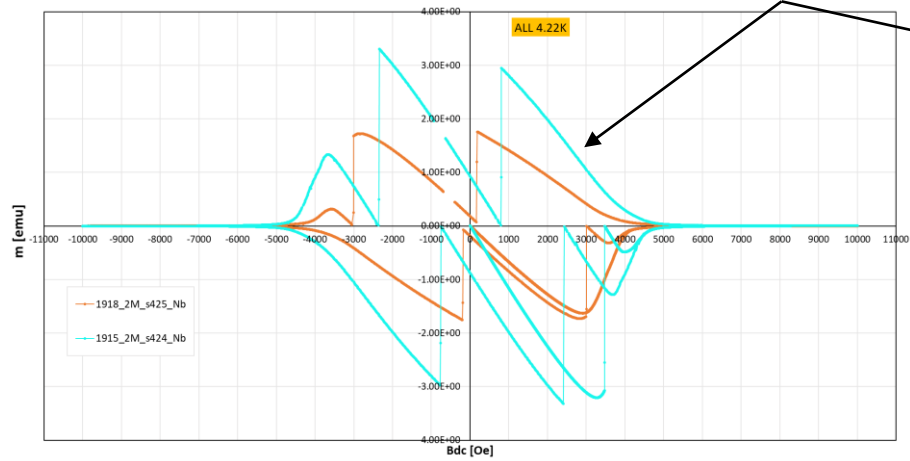
## Table-summary – NbN (Siegen)

	Sample	Ben [Oe] (2% crit. at 4.22 K)		Tc [K]
		Perpend	Parallel	
<b>NbN</b>	1918_1L-s1_I/Si		80	15
	1918_2M_s425_Nb		1060	15.8 / 9.3
	1918_4M-s642_Cu		110	16.1
Substrates:	1918_5R-s2_I/Si		100	15
<b>Cu</b>	1621_I/Si		60	14.5
<b>bulk Nb</b>	1583_I/Si		110	15.8
<b>I/Si</b>	1915_1L-s1_I/Si		100	13.4
<b>Stainless steel</b>	1915_2M_s424_Nb		1220	13.8 / 9.3
	1915_4M-s641_Cu		80	13.5
	1915_5R-s2_I/Si		90	13.2
	1914_Nb		1300	13 / 9.3
UNI Siegen	1912_Nb		1230	15.2 / 9.3
22-06-21	1899_1L_s1312_SS		-	-
Özdem Sezgin	1899_2M_s1322_SS		-	-
	1899_4M_s1412_Cu/SS		-	-
	1899_5R_s1422_Cu/SS		-	-

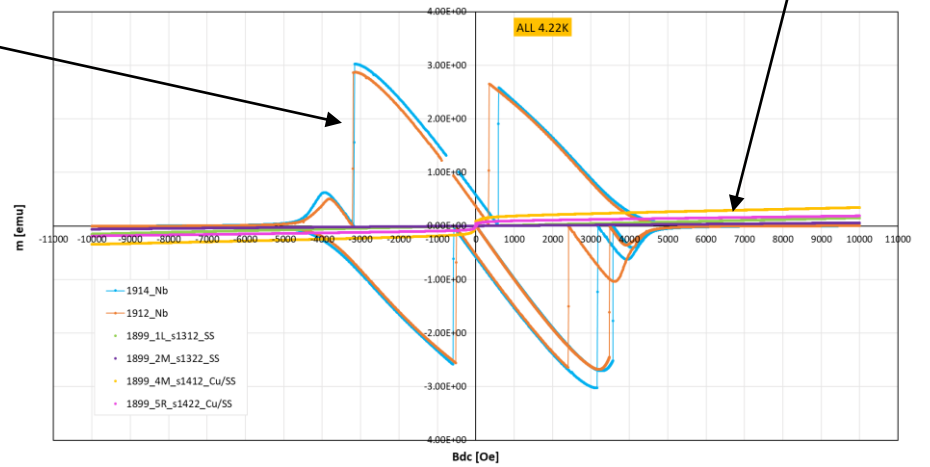
# Mag Loops – NbN (Siegen)



Nb substrates



Stainless Steel substrates



# Table-summary – (STFC)

## V<sub>3</sub>Si

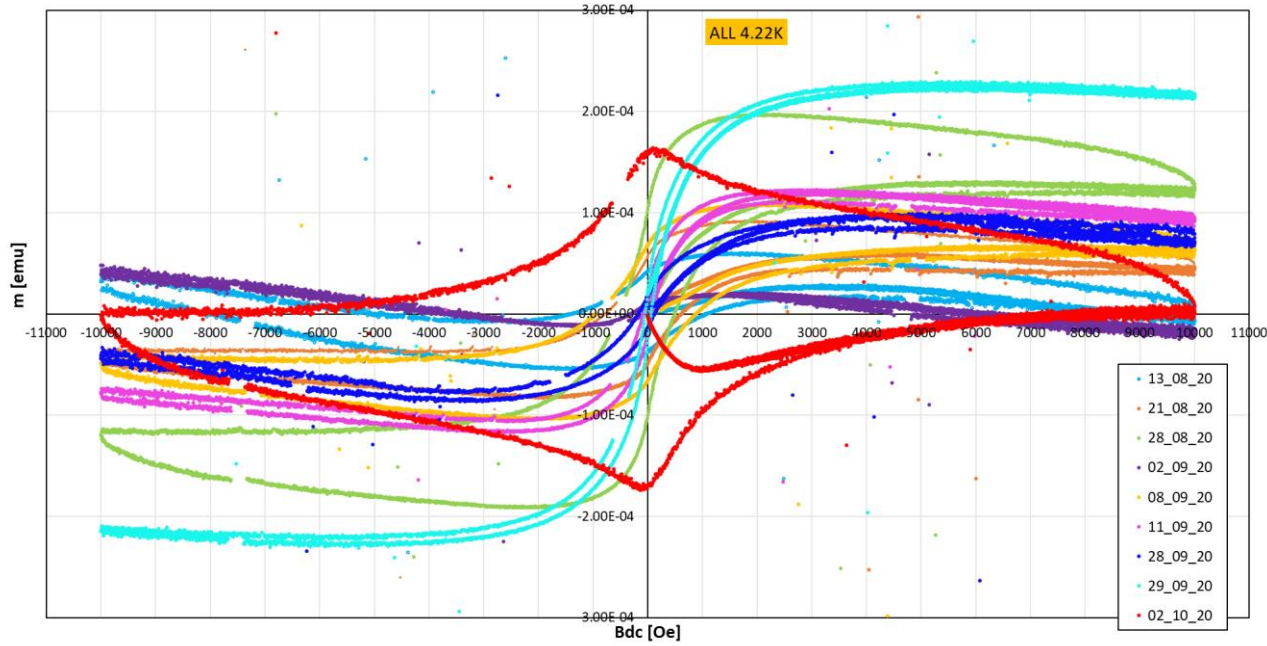
	Sample	Ben [Oe] (2% crit. at 4.22 K)		Tc [K]
		Perpend	Parallel	
HiPIMS V3Si	13_08_20_Cu		~ 10	10.2
	13_08_20_Sapp/VG ????		20	9.2
	13_08_20_Ta			
Substrates:	21_08_20_Cu		~ 10	10.7
Cu	21_08_20_Sapp/VG ????		20	9.5
Sapphire	21_08_20_Ta			
Tantal	28_08_20_Cu		~ 10	12.3
VG	28_08_20_Sapp/Si/VG/Ta ????		70	11.2
Si	28_08_20_Sapp/Si/VG/Ta ????			
	02_09_20_Cu		~ 10	11.5
	02_09_20_Sapp/VG ????		20	10
STFC Daresbury	02_09_20_Ta			
15.3.2021 (1)	08_09_20_Cu		~ 10	10.8
Reza Valizadeh	08_09_20_Sapp/VG ????		100	11
	08_09_20_Ta			
	11_09_20_Cu		~ 10	10.5
	11_09_20_Sapp/VG ????		0	-
	11_09_20_Ta			
	28_09_20_Cu		~ 10	10.7
	28_09_20_Sapp/VG ????		0	-
	28_09_20_Ta			
	29_09_20_Cu		0	-
	29_09_20_Sapp/VG ????		0	-
	29_09_20_Ta			
	02_10_20_Cu		110	12
	02_10_20_Sapp/VG ????		40	12.9
	02_10_20_Ta			

## Nb

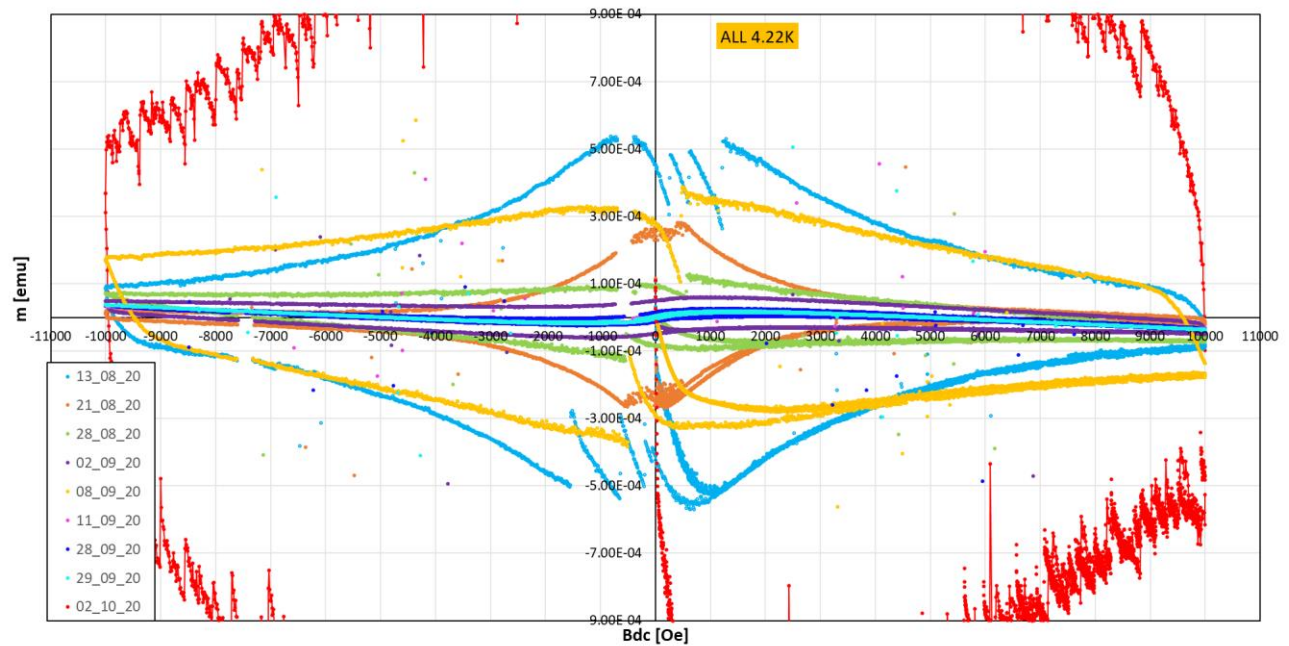
	Sample	Ben [Oe] (2% crit. at 4.22 K)		Tc [K]
		Perpend	Parallel	
HiPIMS/DC Nb	07_10_20_Cu		50	9.3
	07_10_20_Sapp/VG ????		320	9.25
	07_10_20_Ta			
Substrates:	10_10_20_Cu		??	9.1
Cu	10_10_20_Sapp/VG ????		260	9.3
Sapphire	10_10_20_Ta			
Tantal	05_11_20_Cu		80	9.3
VG	05_11_20_Sapp/VG ????		140	9.3
Si	05_11_20_Ta			
	09_11_20_Cu		140	9.3
	09_11_20_Sapp/VG ????		130	9.25
STFC Daresbury	09_11_20_Ta			
15.3.2021 (2)	11_11_20_Cu		60	9.1
Reza Valizadeh	11_11_20_Sapp/VG ????		70	9.25
	11_11_20_Ta			
	13_11_20_Cu		130	9.2
	13_11_20_Sapp/VG ????		300	9.3
	13_11_20_Ta			
	24_11_20_Cu		130	9.1
	24_11_20_Sapp/VG ????		300	9.25
	24_11_20_Ta			
	30_11_20_Cu		??	8.9
	30_11_20_Sapp/VG ????		60	9.3
	30_11_20_Ta			
	02_12_20_Cu		120	9.3
	02_12_20_Sapp/VG ????		50	9.3
	02_12_20_Ta			
	04_12_20_Cu		60	9.2
	04_12_20_Sapp/VG ????		90	9.25
	04_12_20_Ta			
	02_03_21_Cu		120	7.4
	02_03_21_Sapp/VG ????		370	8.2
	02_03_21_Ta			

# Mag Loops - V<sub>3</sub>Si (STFC)

Cu substrates

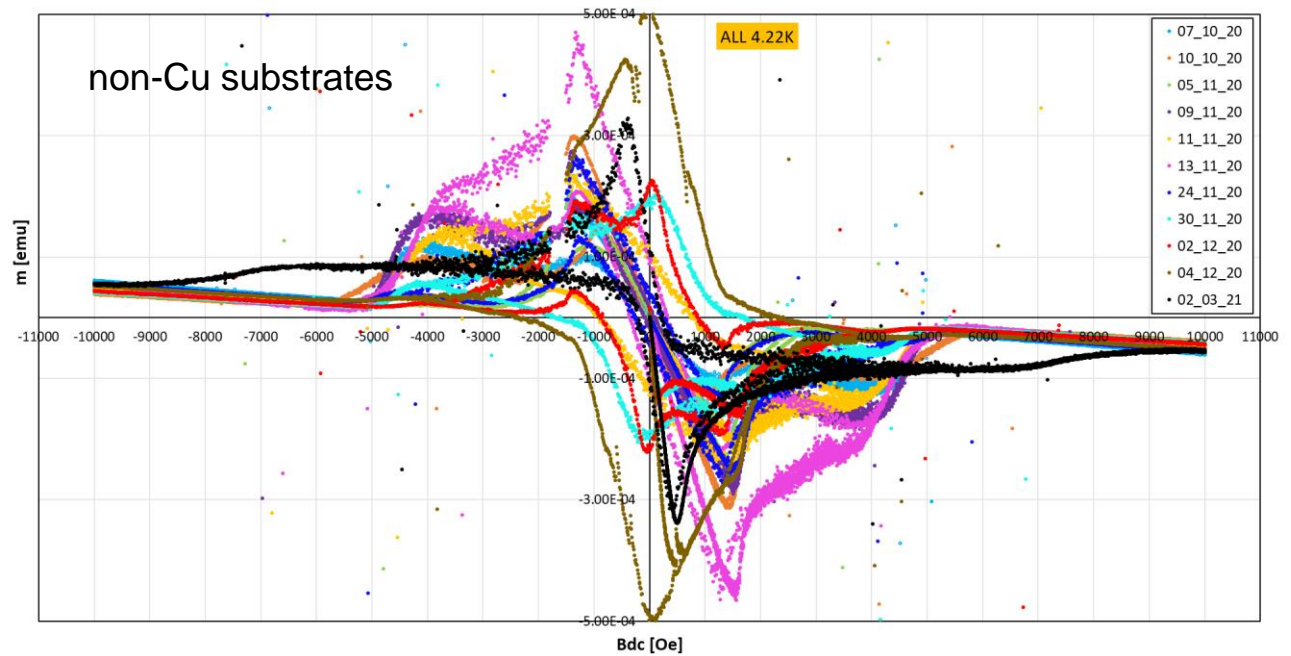
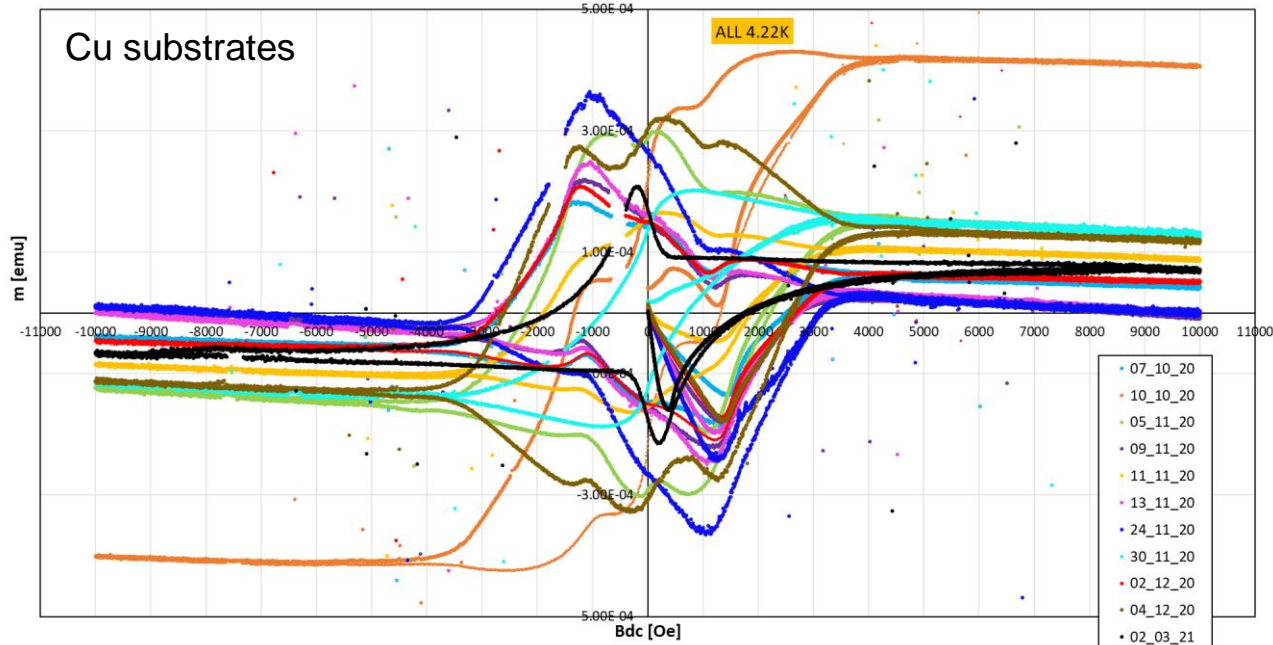


non-Cu substrates



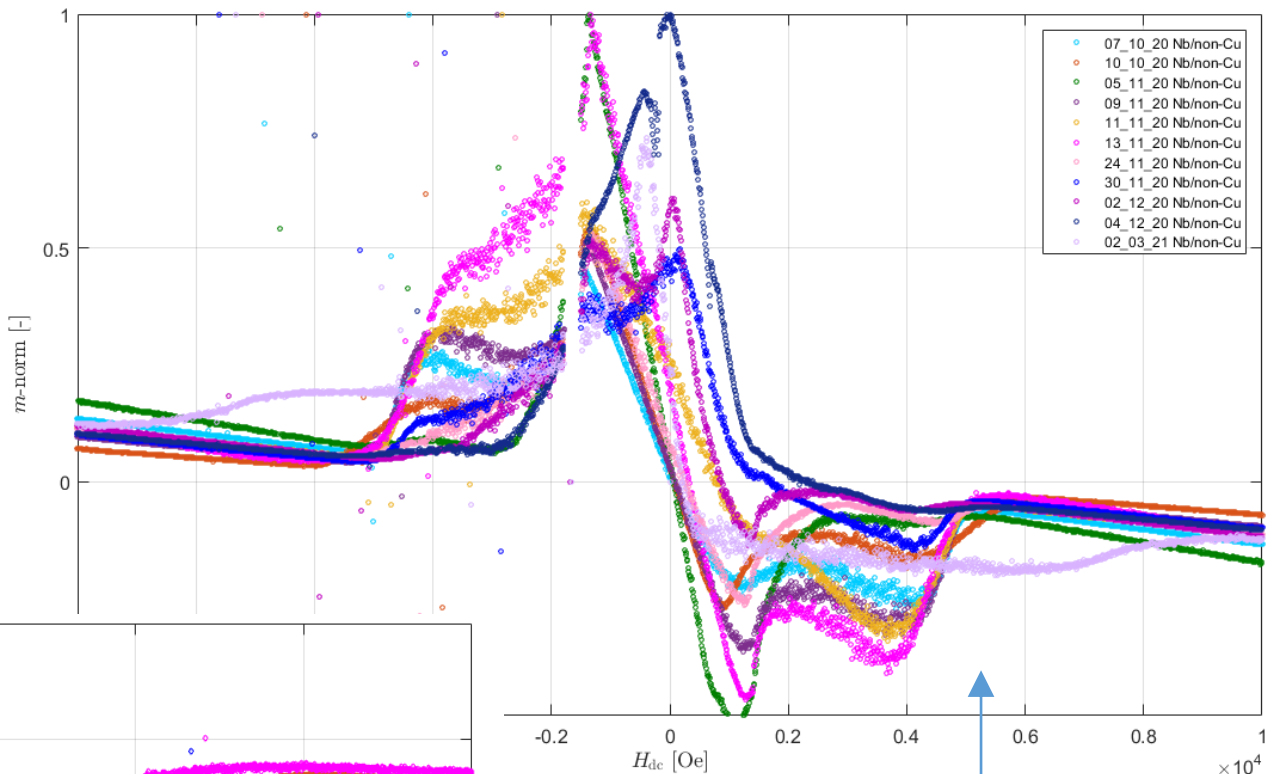


# Mag Loops – Nb (STFC)



# Mag Loops – Nb/nonCu (STFC) normalised

Virgin curve,  
normalized to |Max|



Loop – upper branch,  
normalized to Max

