
Bruker HTS GmbH
Ehrichstrasse 10
63450 Hanau
Germany

DATA SHEET BHTS CURRENT LEAD APPLICATION TAPE TYPE II

For further Informations, please contact:

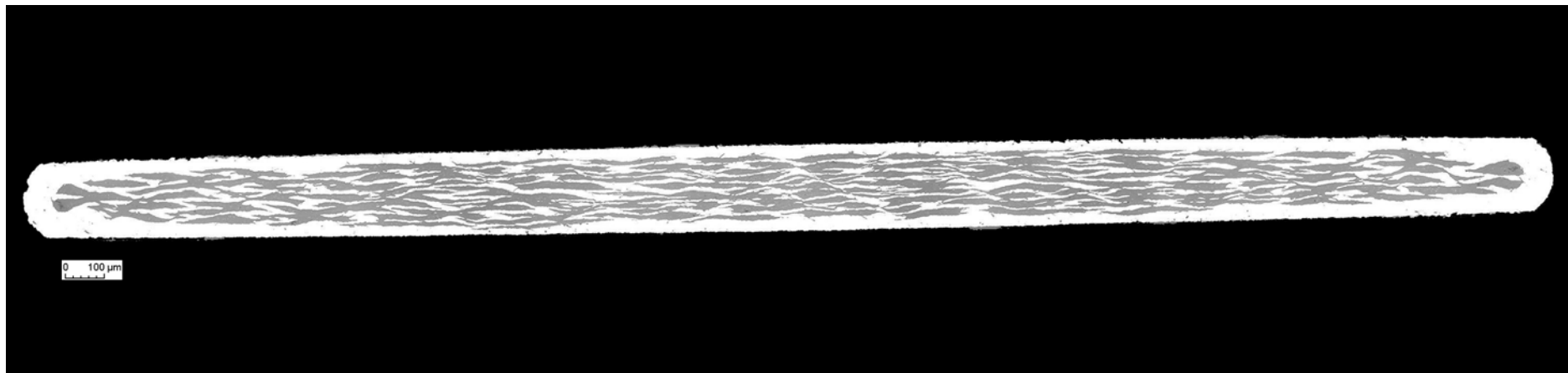
Mr. Reinhard Dietrich

Phone: + 49-6181-4384-4062
e-mail: info@bruker-hts.com

General characteristics of the BHTS current lead application tape

BHTS CURRENT LEAD APPLICATION Bi-2223 TAPE TYPE 2	
matrix composition [wt.-%]	AgAu5 / AgAu5Mg0.18
tape dimension width [mm]	4.00 (+/- 0.20)
tape dimension thickness [mm]	0.220 (+/- 0.03)
filament number	121
filling factor [%]	abt. 40
matrix porosity [%]	< 1
final density of the oxide core [%]	> 85
critical tensile strength [room temperature, MPa]	> 90
critical bending radius [room temperature, mm]	< 50
I_c (77 K, 1μV/cm) [A]	> 110
n-value	> 15
available unit length [m]	≤ 100

Table 3: Overview of general characteristics of the BHTS current lead application tape type2



Picture 4: metallographic cross section of a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2

The critical current of the BHTS HTS tape as a function of length

113.70 A $\leq I_c(1 \text{ uV/cm}) \leq 127.83 \text{ A}$; $\langle I_c \rangle [\text{A}]$: 123.06 \pm 2.86 (2.88 for n-1)

18.39 $\leq n \leq 39.24$; $\langle n \rangle$: 27.38 \pm 4.19 (4.21 for n-1)

0.00 A $\leq I_{c2}(0 \text{ uV/cm}) \leq 0.00 \text{ A}$; $\langle I_{c2} \rangle [\text{A}]$: 0.00 \pm 0.00 (0.00 for n-1)

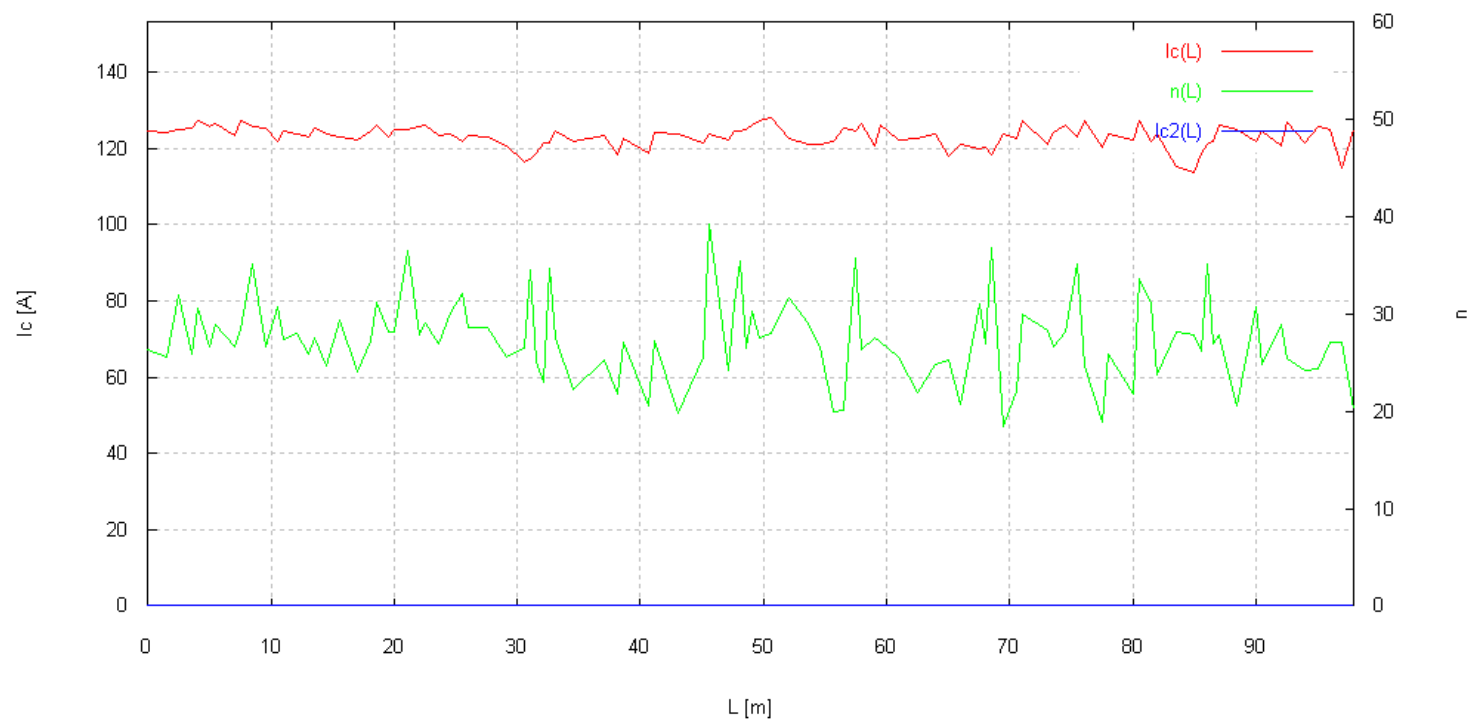


Figure 15: $I_c(L)$ for a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2, tap distance 0.5 m

The geometry of the BHTS HTS tape as a function of length

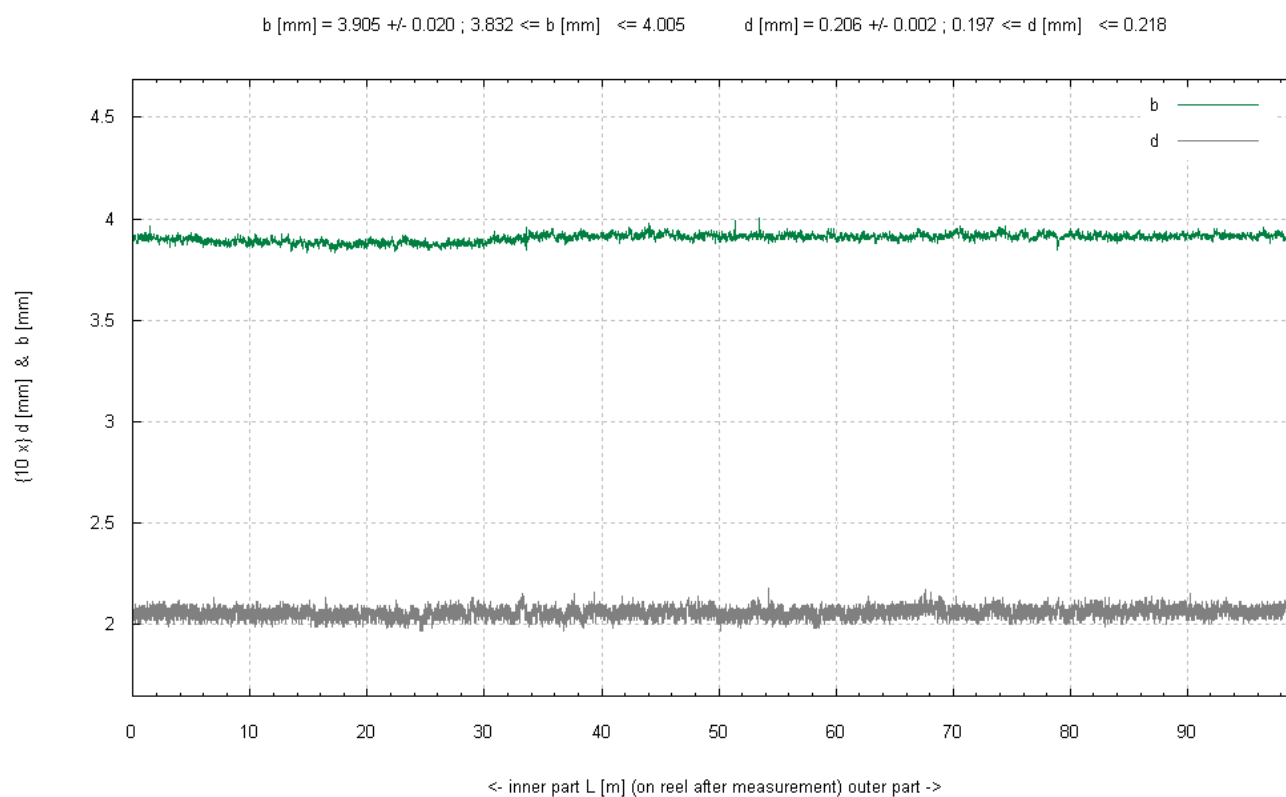


Figure 16: Width $B(L)$ and thickness $D(L)$ of a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2, resolution 10 mm

The critical current of the BHTS HTS tape as a function of temperature in self field

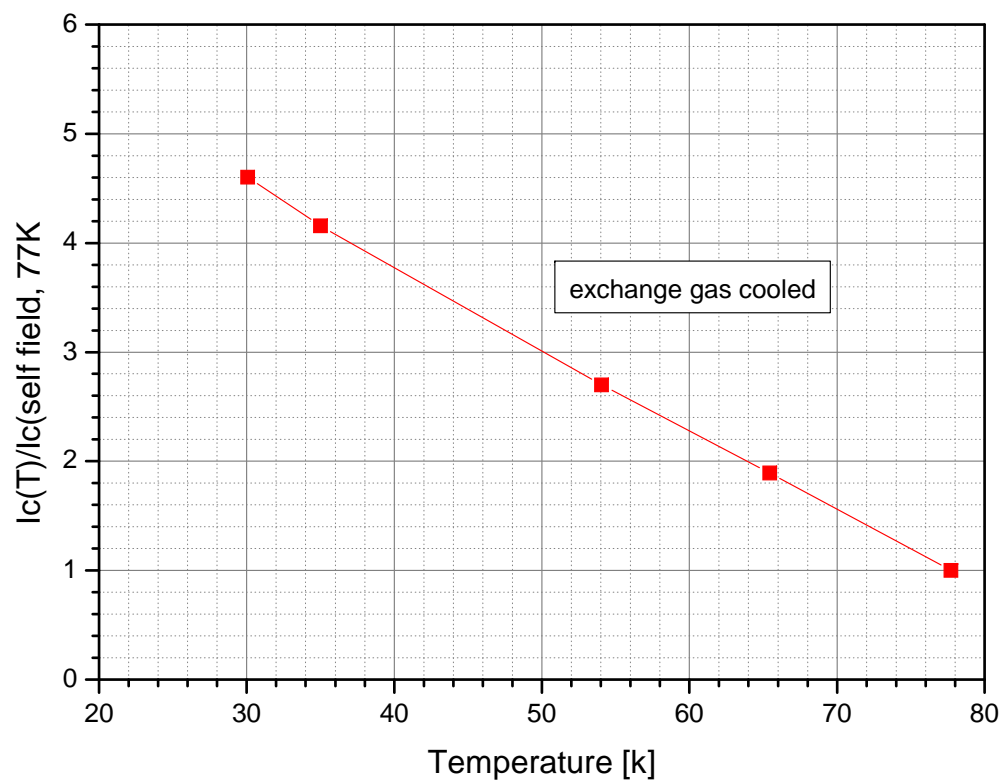


Figure 17: $I_c(T)$ for a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2

The critical current of the BHTS HTS tape as a function external magnetic field and temperature

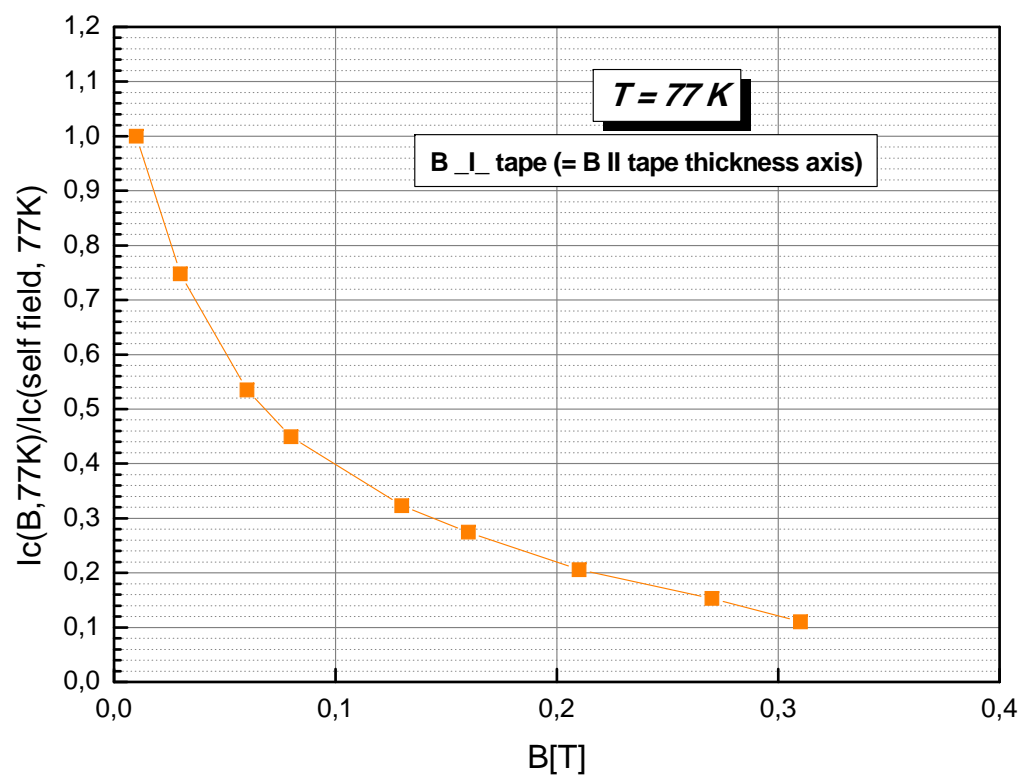


Figure 18: $I_c(B)$ at $T = 77 K$ for a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2

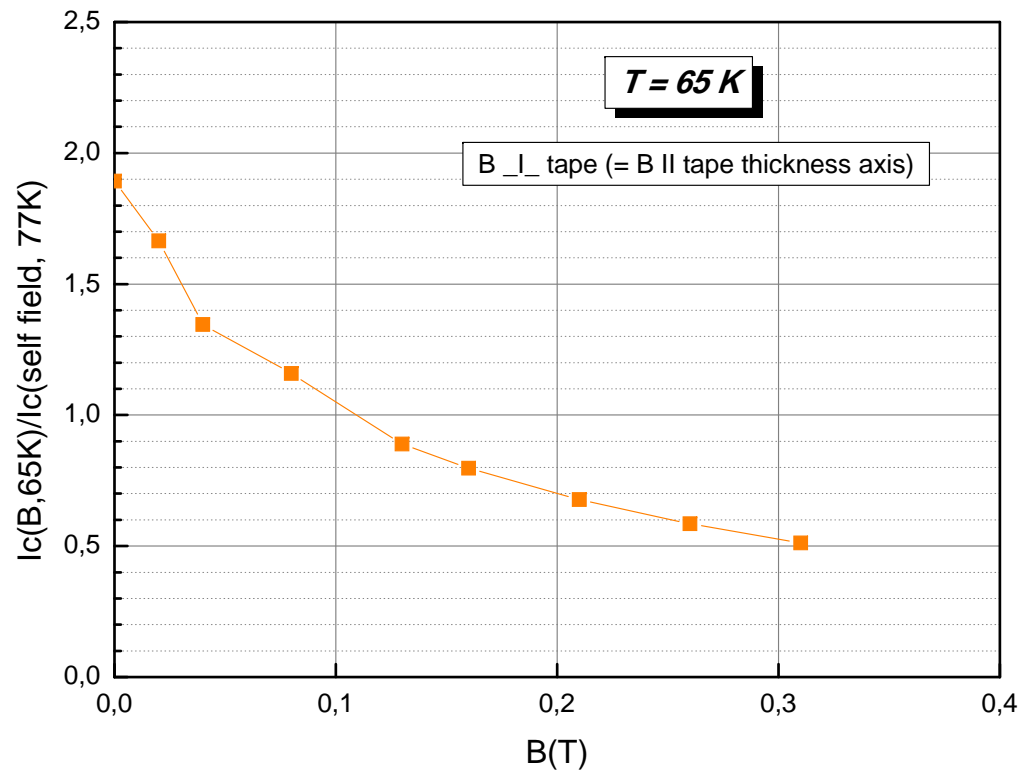


Figure 19: $I_c(B)$ at $T = 65 K$ for a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2

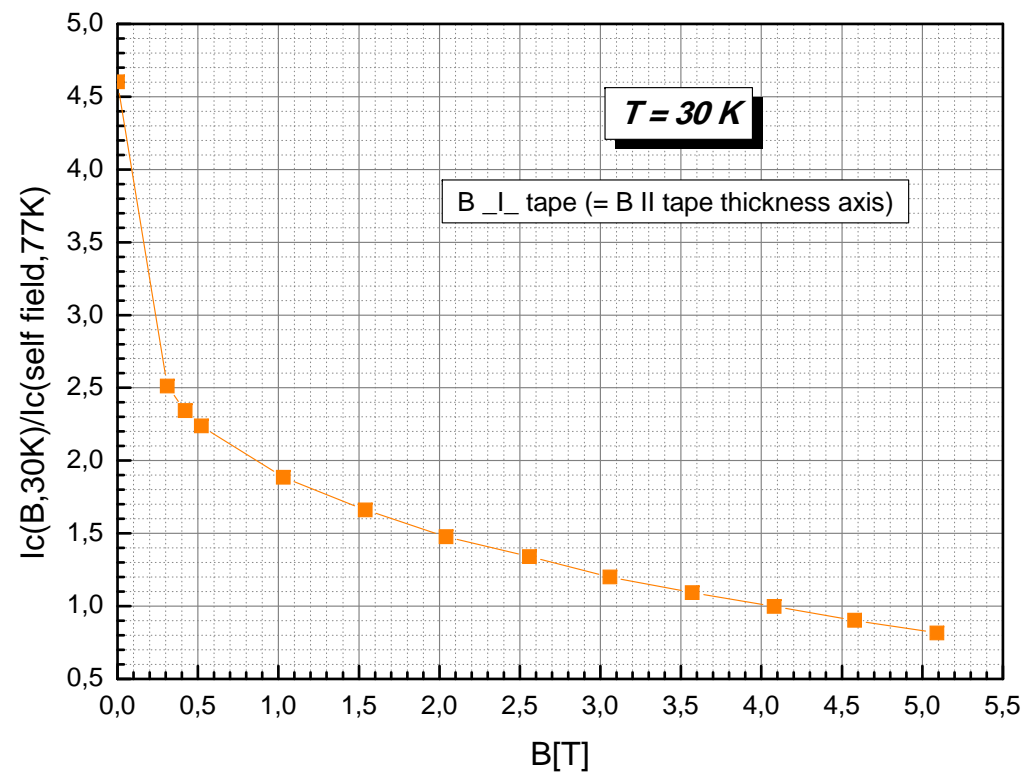


Figure 20: $I_c(B)$ at $T = 30\text{ K}$ for a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 current lead tape type 2

The critical current of the BHTS HTS tape as a function of stress and bending radius

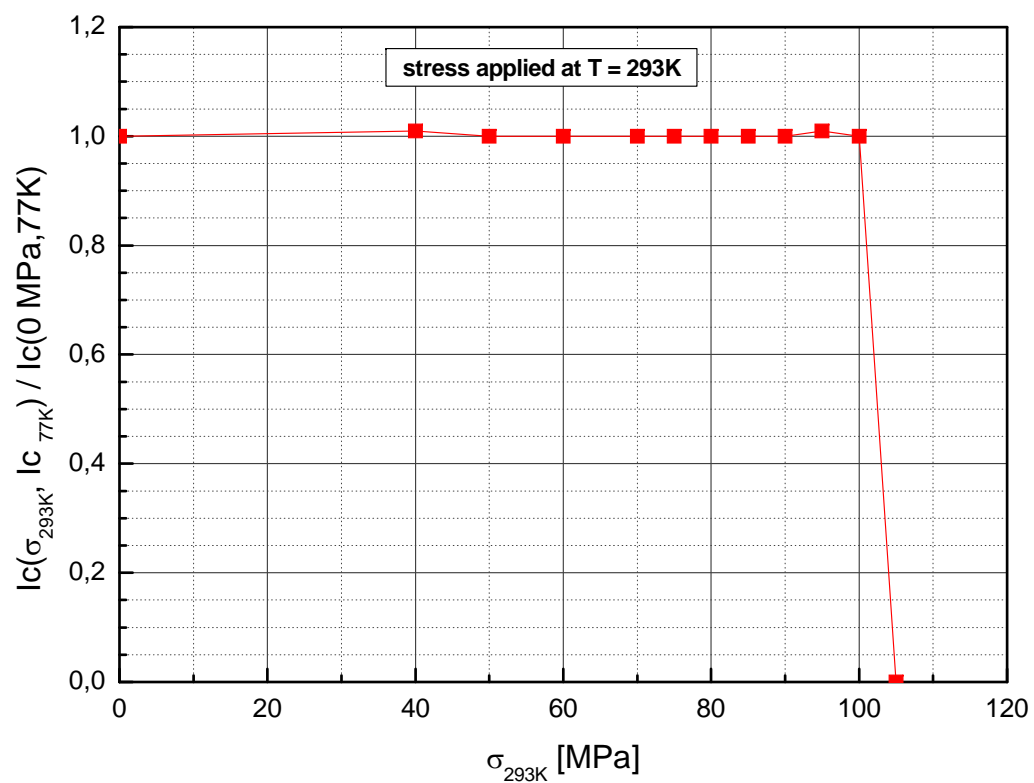


Figure 21: I_c (stress) at $T = 77 \text{ K}$ (stress applied at 293 K) of a BHTS AgAu5/AgAu5Mg0.15 HTS tape type 2

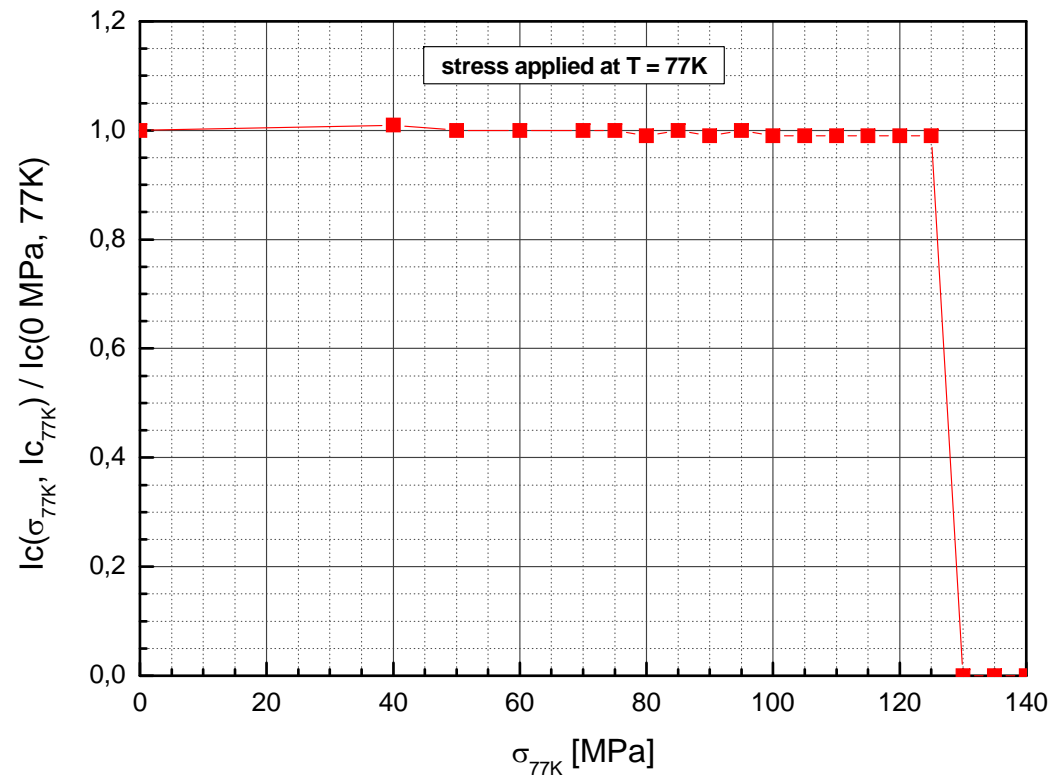


Figure 22: I_c (stress) at $T = 77 \text{ K}$ (stress applied at 77 K) of a BHTS AgAu5/AgAu5Mg0.15 HTS tape type 2

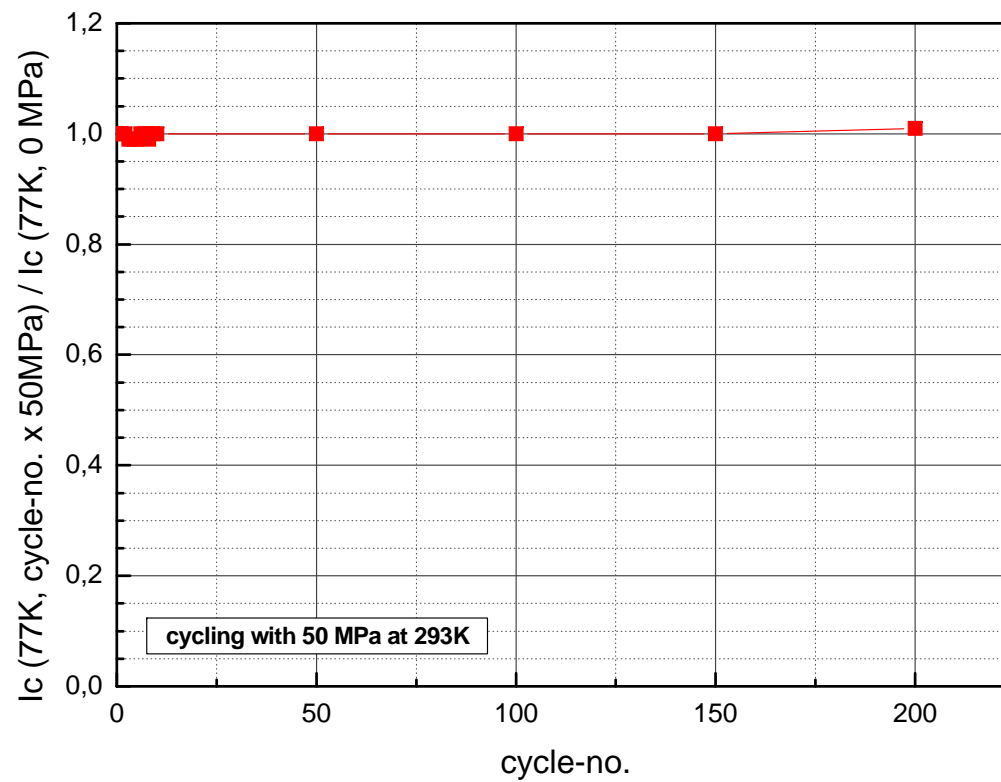


Figure 23: I_c (stress) at $T = 77\text{ K}$ (stress of 50 MPa applied at 293 K for up to 200 times with partial intermediate I_c measurement at 77 K) of a BHTS AgAu5/AgAu5Mg0.15 HTS tape type 2.

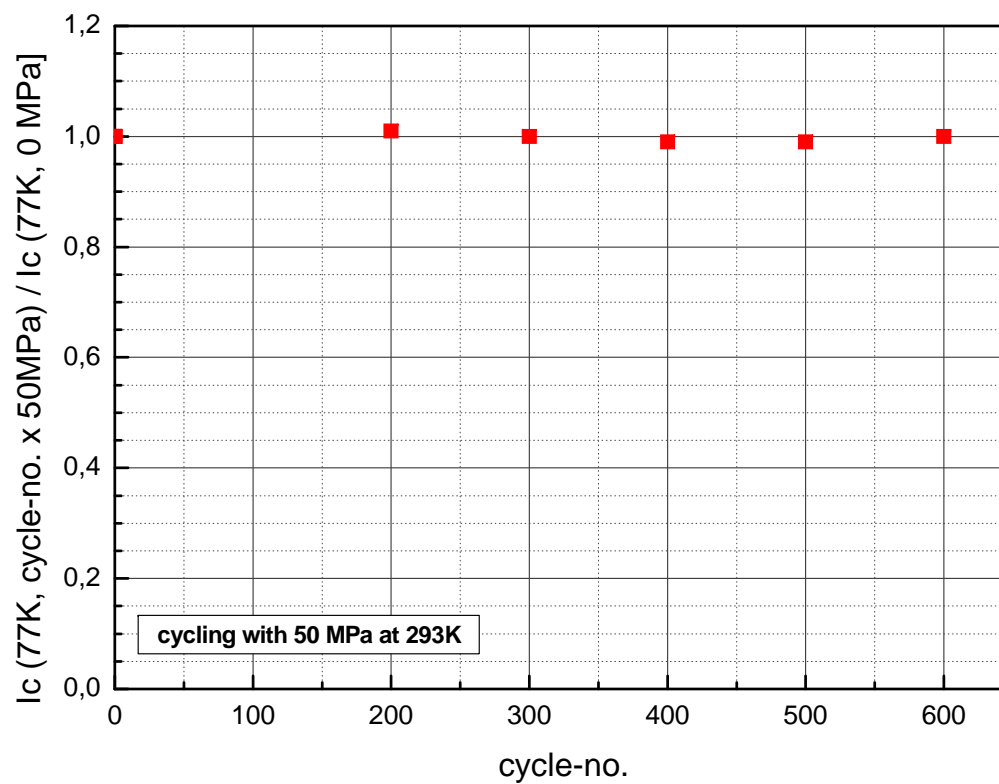


Figure 24: I_c (stress) at $T = 77\text{ K}$ (stress of 50 MPa applied at 293 K for up to 600 times) of a BHTS AgAu5/AgAu5Mg0.15 HTS tape type 2

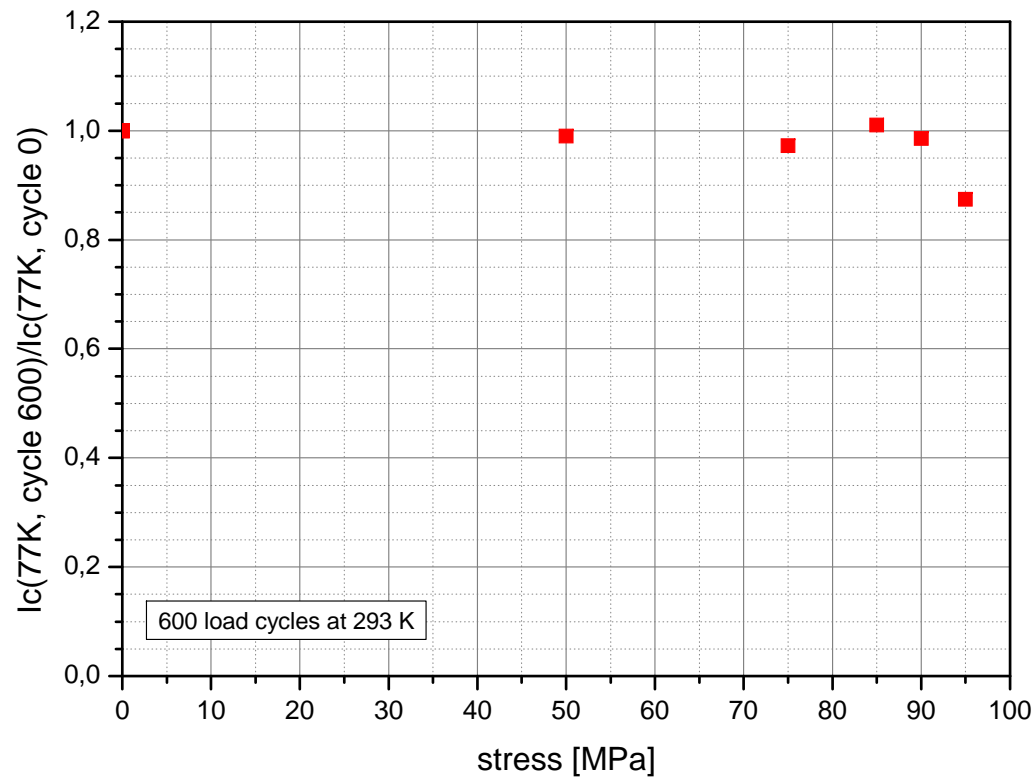


Figure 25: I_c (stress) at $T = 77\text{ K}$ (stress applied at 293 K 600 times) of a BHTS AgAu5/AgAu5Mg0.15 HTS tape type 2

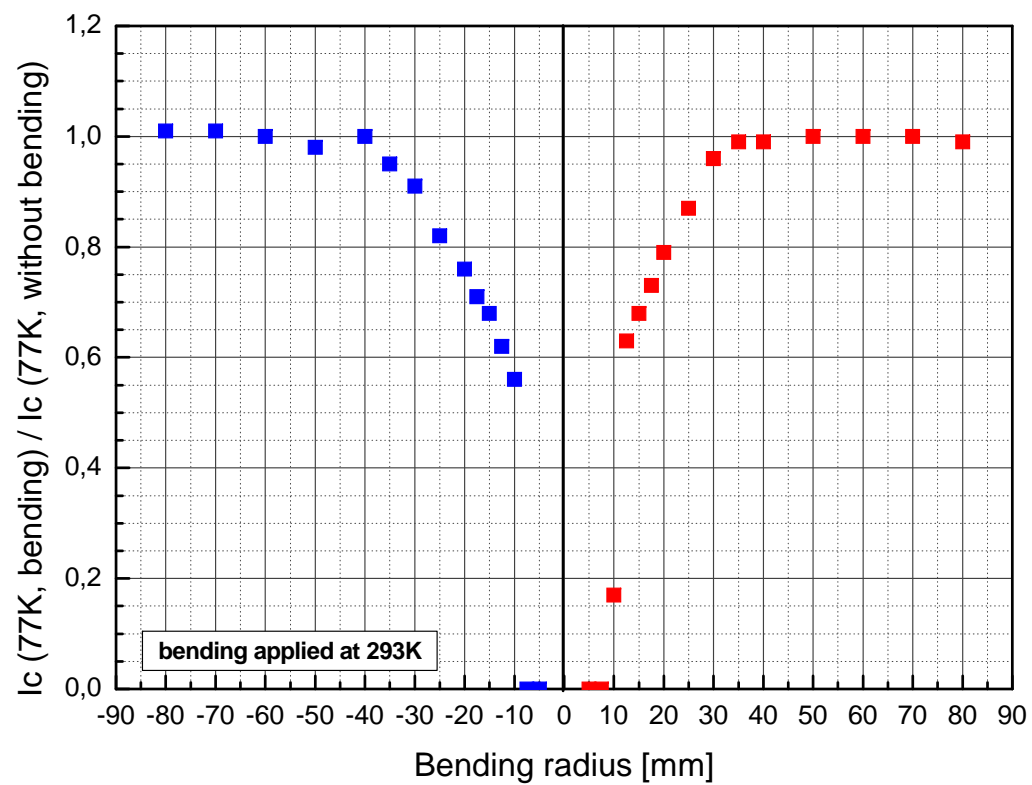


Figure 26: I_c (bending) at $T = 77$ K (bending applied at 293 K) of a BHTS AgAu/AgAuMg0.15 HTS tape type 2

The thermal conductivity of the BHTS HTS tape as a function of temperature

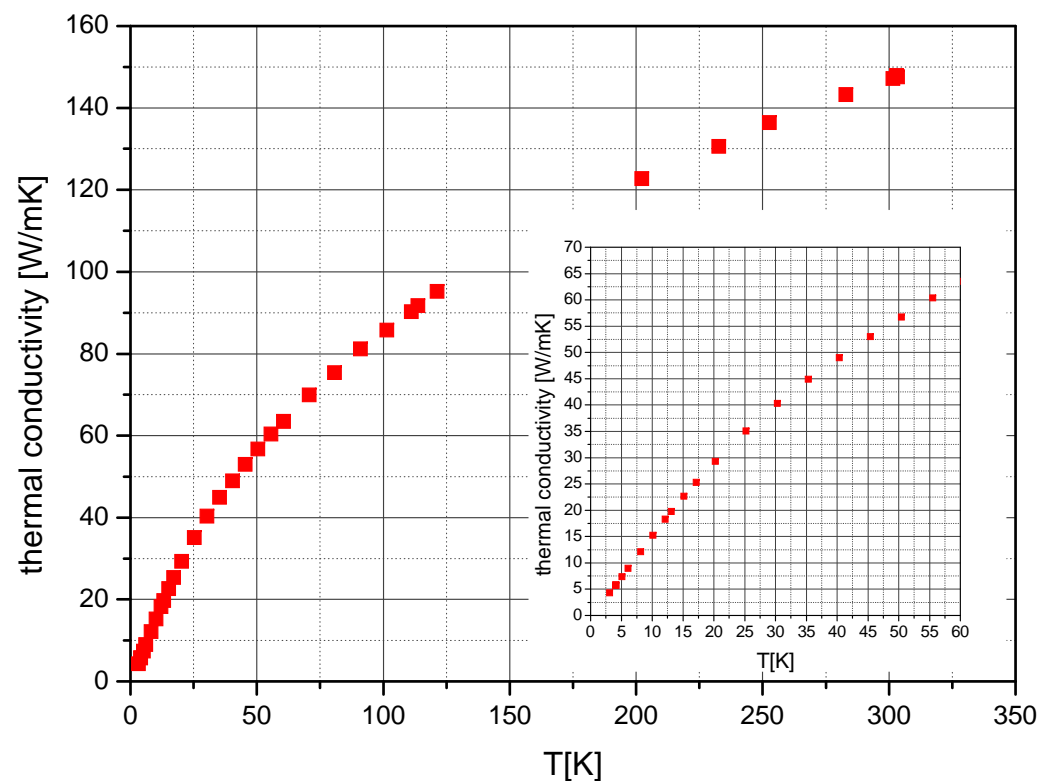
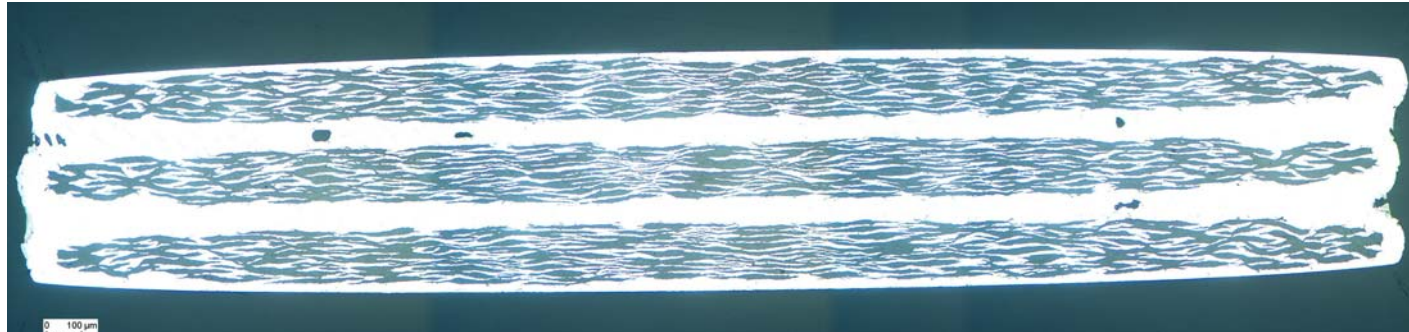


Figure 27: Thermal conductivity of a BHTS AgAu5/AgAu5Mg0.15 HTS tape type 2 (measurement performed by Forschungszentrum Karlsruhe)

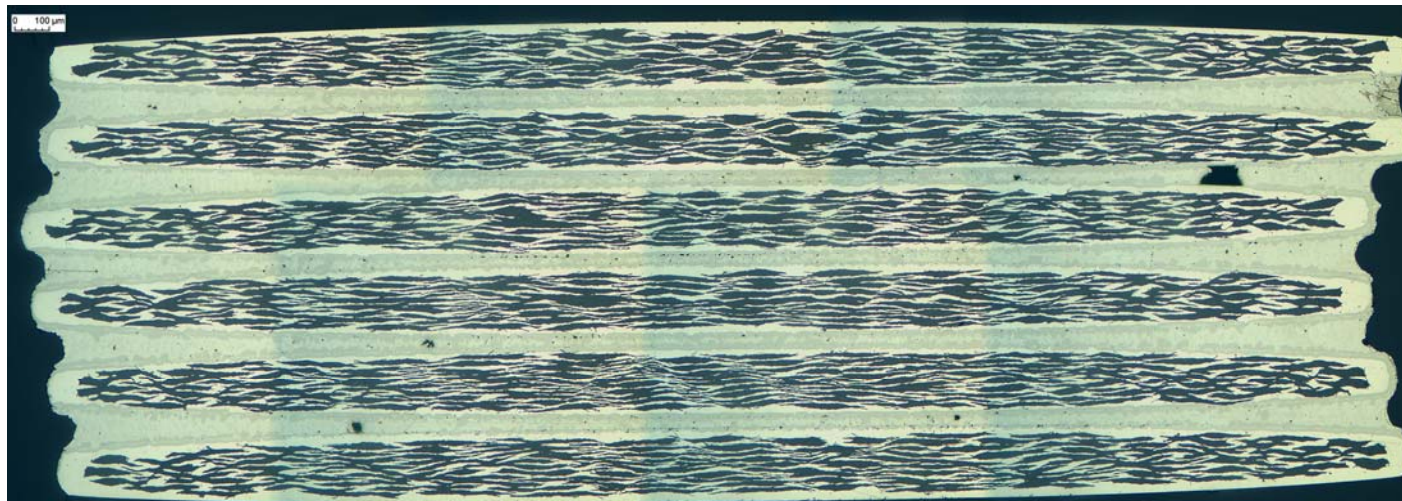
HTS Stacks made of BHTS current lead tape type 2

Number of HTS tapes in stack	I _c (77K, s.f.)
2	200
3	270
4	340
5	390
6	450

Table 4: Overview of I_c characteristics of stacks made of BHTS current lead application tape type 2



(a)



(b)

Picture 4: metallographic cross section of a BHTS AgAu5/AgAu5Mg0.15 Bi-2223 stack made of (a) 3 and (b) 6 current lead tapes type 2