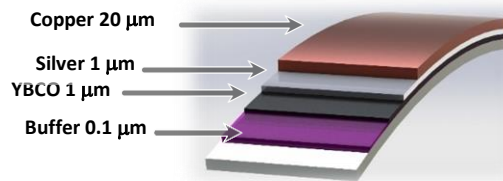


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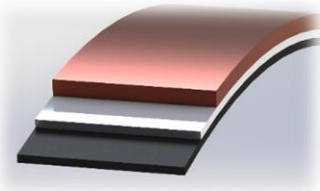
High Temperature Superconducting Devices

As-delivered tape

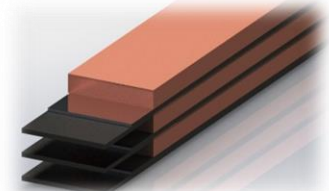


The YBCO transfer process

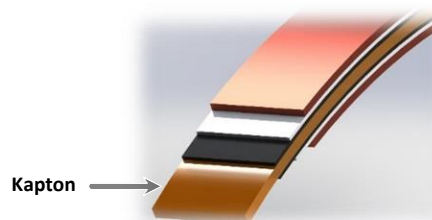
Exfoliation, YBCO on Copper



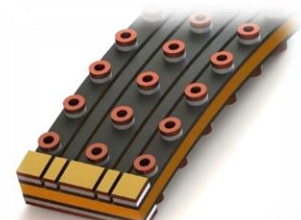
Narrow filament cable



Bonding, YBCO on Kapton



Flexible HTS electronics



We develop superconducting devices based on the transfer of epitaxial YBCO layers on metal and dielectric substrates. The exfoliation process is reel-to-reel and has been tested on longer than 100 m coupons of the conductor. The exfoliated filaments are used to manufacture a narrow, 1 mm-in-diameter cable with electrically coupled filaments.

The exfoliated layers are bonded to a dielectric substrate, such as Kapton, FR 4 or Duroid, thus forming an HTS flexible PCB. The HTS PCB can be processed using standard processing methods, such as through-hole metallization, laser contouring, and metallization.

FLEXIBLE HTS ELECTRONICS

Transfer of epitaxial YBCO layers to Kapton. Ultra-low thermal conductivity.

QUENCH-RESISTANT HTS CABLES

Splice-less HTS cables with coupled filaments and

PATENTS

US20190237650A1

WO2018227083A1

US20200350709A1

US10938128B2

CONTACT US

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Stony Brook, NY 11794

www.brookhaventech.com

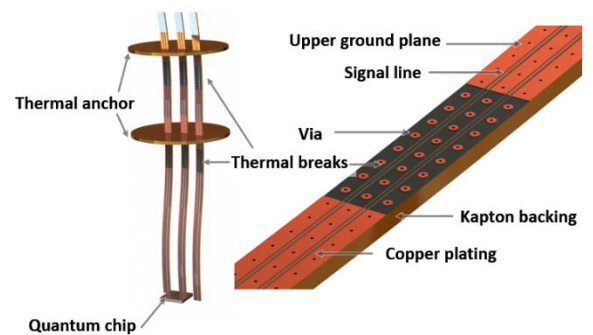
slowa@brookhaventech.com



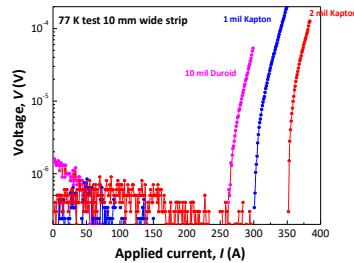
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YBCO on Kapton

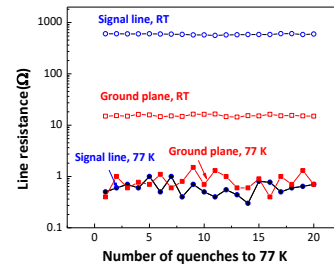
- RF signal transmission, < 1 dB/m loss at 6 GHz
- Isolation with metallized via fences, 10 mm period
- Radiation cooling
- Thermalization areas with ultra-low thermal conductivity



Critical current retention



Thermal cycling



YBCO on FR4



- Applications in cryogenic electronics
- Critical current density > 200 A/cm
- Low-resistance metallization with 20 mm thick copper
- Standard contact lithography processing
- Compatible with SMD mounting

YBCO metal (Copper)

- Narrow, 1 mm, cables with current sharing
- Defect resistance: up to 1 defect per 2 meters
- High, up to 5% fill factor
- Reel to reel laser slicing



PRODUCTS

Superconducting magnet cables
RF signal and DC cables with
ultra-low thermal loss
RF electronics

MARKETS

Quantum computing
NMR RF coils
Cryogenic electronics
Cryogenic current leads
Splice-less high-field cables

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