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## **M2Or3H-04: [Invited] Review on the investigations of uniaxial stress susceptibility of pre-over pressure reacted Bi-2212 round wires for fusion high-field magnet application**

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Bi-2212, a promising cuprate High Temperature Superconductor (HTS), is the only one capable of being formed into round wires. It has a high upper critical magnetic field and critical current density, making it an ideal choice for use in the Cable-In-Conduit Conductors (CICC) of the China Fusion Engineering Test Reactor (CFETR)'s Central Solenoid coils. The Over-Pressure (OP) heat-treatment can dramatically improve the multifilamentary Bi-2212/Ag wires critical current density, however, this also leads to a decrease in diameter and an increase in void fraction in the CICC cables, which can jeopardize magnet stability. To remedy this, a pre-Over Pressure (pre-OP) heat-treatment procedure has been implemented to reduce wire diameter before cabling. By analyzing the wire's critical current performance under axial stress, inter-wire contact force, and bending stress through various tests and simulations, the axial strain and cross angle effects on the pre-OP reacted Bi-2212/Ag wires' critical current degradation have been studied, thus providing guidelines for manufacturing optimal Bi-2212/Ag CICC.

**Primary author:** Dr GAO, Peng (Institute of Plasma Physics Chinese Academy of Sciences)

**Presenter:** WANG, Dongliang (Institute of Electrical Engineering, CAS)

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