HTS for Fusion – Fusion for HTS

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Abstract **- High temperature superconductors (HTS) and nuclear fusion could form a very beneficial symbiotic relation. Using HTS, in particular coated conductors, in a fusion reactor enables higher operating temperatures and higher plasma confining fields than attainable using Nb_3Sn. This makes smaller reactor designs viable and therefore potentially cheaper. Many challenges have to be mastered before magnet coils can be made of coated conductors. One of them is their behavior under neutron radiation which is studied at the Atominstitut. Some recent results are presented. Nuclear fusion on the other hand can help establishing HTS as a mass product. Since a reactor will require tens of thousands kilometer of conductor, tape production has to be scaled up dramatically. That would bring prices down and, therefore, enable new applications which further increase the demand for HTS.**

Keywords (Index Terms) **– High-temperature conductors, coated conductors, high currents cables, fusion magnets, neutron irradiation.**

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