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## MgB<sub>2</sub> thin films for SRF cavity applications

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MgB<sub>2</sub> thin films grown by hybrid physical-chemical vapor deposition (HPCVD) have been investigated for SRF cavity applications. Clean MgB<sub>2</sub> thin films have a low residual resistivity ( $<0.1 \mu\Omega\text{cm}$ ) and a high T<sub>c</sub> of 40 K, promising a low BCS surface resistance. Its thermodynamic critical field H<sub>c</sub> is higher than Nb, potentially leading to a higher maximum accelerating field. The lower critical field H<sub>c1</sub>, which marks the vortex penetration into the superconductor and the vortex motion related dissipation, is lower for MgB<sub>2</sub> than Nb, but it can be enhanced by decreasing the film thickness. I will present results on the enhancement of H<sub>c1</sub> in thin MgB<sub>2</sub> films and coatings, deposition of MgB<sub>2</sub> films on Cu, and the coating of RF cavities by MgB<sub>2</sub>. These results are encouraging for the application of MgB<sub>2</sub> for SRF cavities.

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