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Fe-based Superconducting Thin Films: Properties Relevant to Applications

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***Abstract*—Even after 15 years of research on thin films of Fe-based superconductors, the successful growth of hydrogen-doped *Ln*FeAsO (*Ln*=Nd and Sm) [1-2], K-doped $BaFe_2As_2$ [3], and (Li,Fe)OHFeSe [4] epitaxial thin films has been reported only recently. As a result, several important remarks useful for applications are unveiled: i) heavily electron doping by hydrogen for *Ln*FeAsO leads to a low electromagnetic anisotropy due to a more 3D Fermi surface [5-6], ii) low angle grain boundaries and their network improve in-field critical current density J_c of K-doped Ba122 comparable to that of single crystals by ion-irradiation [7], and iii) Mn-doping significantly improves in-field J_c for (Li,Fe)OHFeSe [8]. In this focus talk, we review the recent development of Fe-based superconducting thin films, involving the artificial grain boundary of several Fe- based superconductors.**

***Keywords (Index Terms)*—Fe-based superconductors, thin films, grain boundary, critical current properties**

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