# New Fe-based Superconductors: Properties Relevant for Applications

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***Abstract*** - Less than two years after the discovery of high temperature superconductivity inoxypnictide LaFeAs(O,F) several families of superconductors based on Felayers (1111,122,11,111) are available. They share several characteristics with cuprate superconductors that compromise easy applications, such as the layered structure, the small coherence length, and unconventional pairing, On the other hand the Fe-based superconductors have metallic parent compounds, and their electronic anisotropyis generally smaller and does not strongly depend on the level of doping, the supposed order parameter symmetry is s wave, thus in principle not so detrimental to current transmission across grain boundaries. From the application point of view, the main efforts are still devoted to investigate the superconducting properties, to distinguish intrinsic from extrinsic behaviours and to compare the different families in order to identify which one is the fittest for the quest for better and more practical superconductors. The 1111 family shows the highest $T_c$, huge but also the most anisotropic upper critical field and in-field, fan-shaped resistive transitions reminiscent of those of cuprates,while the 122 family is much less anisotropic with sharper resistive transitions as in low temperature superconductors, but with about half the $T_c$ of the 1111 compounds. An overview of the main superconducting properties relevant to applications will be presented. Upper critical field, electronic anisotropy parameter, intragranular and intergranular critical current density will be discussed and compared, where possible, across the Fe-based superconductor families.

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