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Upper critical and irreversible fields of polycrystalline $CeFeAsO_{1-x}F_x$ superconductors SHEN V. CHONG, JEFFERY L. TALLON, Industrial Research Limited, New Zealand, GRANT V.M. WILLIAMS, The MacDiarmid Institute, Victoria University of Wellington, New Zealand — We have investigated the upper critical (H_{c2}) and irreversible (H_{irr}) fields of polycrystalline samples of Ce oxypnictide at different doping levels. H_{c2} was obtained from temperature dependent resistivity measurements with increasing applied magnetic field. Critical field values as high as 150 Tesla were observed with a decreasing trend as the doping level shifts from a slightly under-doped state to the highly over-doped region. The irreversible fields were lower in this superconductor compared with other rare-earth oxypnictides, with values below 3 Tesla at 20 K. However, H_{irr} was found to increase with increasing doping, opposite to that of H_{c2}. The origin of H_{irr} was studied by determining the exponent 'n' extracted from plots of $\log_{10}(H_{irr})$ versus $\log_{10}(1\text{-}T/T_c)^n$. We found that H_{irr} follows a 3D vortex lattice-melting model similar to the other low anisotropic iron-based superconductors.

[X] Prefer Oral Session
[ ] Prefer Poster Session

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