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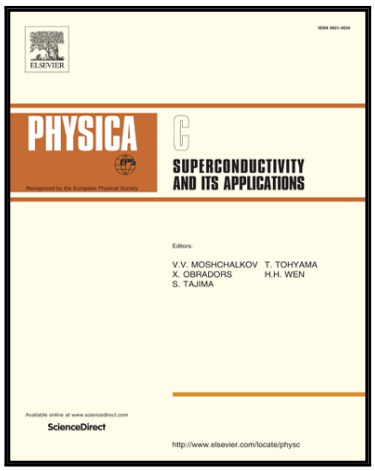

Phase relations and structure-properties correlations in Fe(S,Se,Te)

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Highlights

- Three series of polycrystalline samples with compositions $Fe_{1.02}Te_ySe_{1-y-x}S_x$ have been synthesized.
- The S for Se substitution in $Fe_{1.02}Te_ySe_{1-y-x}S_x$ result in the growth of the average interlayer distance in the superconducting tetragonal phase.
- Replacement of selenium by sulfur in $Fe_{1.02}Te_ySe_{1-y-x}S_x$ also results in the growth of the volume fraction of the hexagonal phase.
- We found that the T_c^{onset} values decrease near linearly with increasing lattice parameter *c* of tetragonal phase.

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