

Alcoholic beverages induce superconductivity in $\text{FeTe}_{1-x}\text{S}_x$

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Discovery of Fe-based superconductor was received with considerable surprise, since the Fe-based superconductor is expected to be a new series of high- T_c superconductors. The FeSe with $T_c \approx 10$ K has the simplest crystal structure among the iron-based superconductors. On the other hand, analogous compound FeTe shows structural and magnetic transition around 70 K, and superconductivity was not observed.

Recently, we found that hot alcoholic beverages were effective in inducing superconductivity in S doped FeTe. Heating the $\text{FeTe}_{0.8}\text{S}_{0.2}$ compound in various alcoholic beverages enhances the superconducting properties compared to a pure water-ethanol mixture as a control. Heating with red wine for 24 h leads to the largest shielding volume fraction of 62.4 % and the highest zero resistivity temperature of 7.8 K. Some components present in alcoholic beverages, other than water and ethanol, have the ability to induce superconductivity in the $\text{FeTe}_{0.8}\text{S}_{0.2}$ compound.

Reference: K. Deguchi et al., Supercond. Sci. Technol. 24 (2011) 055008.