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Seebeck effect in the charge density wave state of organic conductor α-(BEDT−TTF)2KHg(SCN)4

Detailed studies of the interlayer Seebeck effect of organic conductor α-(BEDT-TTF)2KHg(SCN)4 as a function of temperature, magnetic field strength, and field orientation are reported. We find that the formation of the CDW0 state is mainly due to the Fermi surface reconstruction as a result of the magnetic breakdown effect since the onset magnetic field for this state is near the magnetic breakdown field. However, the electron-phonon coupling might be also an important mechanism in formation of the CDW0 state in α-(BEDT-TTF)2KHg(SCN)4 as evident from the temperature dependence of the interlayer Seebeck effect. We find that a third CDW state develops at low temperatures below 3K, angles above θ = 40° and fields above the kink field *B*=22 K. At these angles and fields the high field CDWx state with a field dependent wavevector is replaced by the CDWy state with an angle dependent wavevector. In addition, we find that the third CDW state resembles some of the properties of the CDW0 state but the Fermi surface is less imperfectly nested than in the CDW0 state. The temperature measurements reveal substantial differences in the T−dependent profiles of the Seebeck effect depending on the magnetic field orientation. This allows to specify the temperature interval of existence of each of the CDW states for a given magnetic field strength and orientation as well as to reveal the presence of other possible states and transitions in this organic conductor that have not been previously detected by magnetoresistance and/or magnetization measurements.

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