

EXPECTED THERMOELECTRIC PROPERTIES OF NANOSTRUCTURED TTT(TCNQ)₂ CRYSTALS

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Advanced thermoelectric materials represent a keystone for development of new efficient devices for energy harvesting, local power generation from the waste heat and direct cooling systems. Thermal absorption of IR radiation, which generates a small electrical current, opens new outlooks for developing sensitive thermoelectric biosensors or night-vision systems. Recent investigations have demonstrated that nanostructured materials are very promising approach for thermoelectric applications [1]. Organic crystals of TTT(TCNQ)₂ are proposed as efficient nanostructured thermoelectric material of *n* – type. Due to the pronounced quasi-one-dimensionality of internal structure and to the property that allows the formation of non-stoichiometric compounds, the thermoelectric figure of merit of these crystals, *ZT*, may be increased by optimizing the concentration of conducting electrons. Theoretically, it was predicted *ZT* ~ 1, if an additional doping with donors and further purification of the crystal are performed [2].

[1] A. I. Casian, J. Pflaum, I. I. Sanduleac, Prospects of low dimensional organic materials for thermoelectric applications, *Journal of Thermoelectricity*, No.1, pp. 16 – 27 (2015).

[2] I. Sanduleac, A. Casian, TTT(TCNQ)₂ as prospective thermoelectric *n* – type material, ICT&ECT Conference, June 28th – July 2nd, 2015, Dresden, Germany, pp.89.

