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Electronic Properties of [3.3]TTF-Phan TCNQ-Crystals.

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[3.3]TTF-Phan-TCNQ-crystals with a composition of 1:4 (Angew.Chem. 92,51, 1980; Angew.Chem. Int.Ed.Engl. 19,67,1980)) are semi-conductors with room temperature conductivities along the needle axis of about $10^{-2}(\Omega cm)^{-1}$. Between 50 K and 400 K the conductivity changes over 12 orders of magnitude. Polycristalline pills of this material show very similar conductivity behaviour. Only one strong sharp ESR-signal was observed in the crystals. From the weak anisotropy of the g-value and the isotropic g-value this ESR-signal could be assigned to TCNQ anions. In contrast to the conductivity measurements the ESR-signal was temperature independent down to 50 K and corresponds to a more metallic behaviour. Therefore we concluded that the TTF-Phan-TCNQ-crystals are of a two dimensional structure. This assumption could be confirmed by the x-ray structure analysis.