

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Electrical transport properties of FeCl₃ doped poly(phenylenevinylene-co-3,4-ethylenedioxythiophene)
KYUNG HO KIM, AJEONG CHOI, JUN-MO PARK, SUNG JU HONG, JOON BEOM SHIM, TAE-LIM CHOI, YUNG WOO PARK, Seoul National University — Poly(arylenevinylene) copolymers, in which 3,4-ethylenedioxythiophene (EDOT) and dialkoxy phenylenes are alternatively linked by vinylene unit, were synthesized by the Horner-Emmos reaction. The samples were doped with FeCl₃ and the temperature dependence of conductivity, magnetoresistance (MR), and thermoelectric power (TEP) were measured. The temperature dependence of conductivity follows $\exp[-(T_0/T)^{1/2}]$ and positive MR is observed up to $H = 14$ tesla. The TEP can be described by $S(T) = A + B/T + CT$. These behaviors are understood in the frame of charging energy limited tunneling conduction between metallic islands separated by insulating barriers.

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Date submitted: 13 Nov 2011

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