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**Low temperature electrical conductivity of low-density polyethylene/carbon black composites** TAREK TAWALBEH, NMSU, SUBHI SAQ'AN, SHADI YASIN, AWWAD ZIHLIF, GIUSEPPE RAGOSTA — The study deals with the electrical characteristics of carbon black/low-density polyethylene (CB/LDPE) composites of various CB filler concentrations (10, 15, and 20% wt.). DC-electrical conductivity was studied as a function of filler concentration in the low temperature range 25–285K. It was found that the composites exhibit a negative temperature coefficient of resistivity (TCR) at low temperatures and a high enhancement in electrical conductivity with both temperature and carbon black concentration. The observed increase of conductivity with the filler concentration was interpreted through percolation theory. The dependence of the electrical conductivity of the given composites on temperature (25–285 K) was analyzed in terms of a formula consistent with the Mott hopping mechanism.

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