

## Hybrid Conductive Polymer Composites: Effect of Mixed Fillers and Polymer Blends on Pyroresistive Properties

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**Abstract :** High-density polyethylene (HDPE) filled with silver coated glass flakes (5µm) was investigated and the effect on PTC by addition of a second filler (100µm silver coated glass flake) or matrix (polypropylene elastomer) to the composite were examined. The addition of the secondary filler promoted the electrical properties of the composite. The bigger flakes acted like a bridge between the small flakes and this helped to enhance the electrical properties. The PTC behaviour of the composite was also improved by the addition of the bigger flakes due to the increase in separation distance between particles caused by the bigger flakes. Addition of small amount of polypropylene elastomer enhanced not only PTC effect but also improved substantially the flexibility of the composite as well as reduces the overall filler content. SEM images showed that the fillers were dispersed in the HDPE phase.

**Keywords :** positive temperature coefficient, conductive polymer composite, electrical conductivity, high density polyethylene

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