

## البحث رقم (5)

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**Authors:**Huda AlFannakh, *S. S. Arafat*, and S. S. Ibrahim

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**thermal analysis of Synthesis, electrical properties, and kinetic polyaniline/polyvinyl alcohol -magnetite nanocomposites film**

### **Abstract:**

**Polyaniline-poly vinyl alcohol (PANI-PVA) conducting blends containing 15 wt% aniline were synthesized by in situ polymerization of aniline.**

**Three-phase polymer blended nanocomposites with different contents of magnetite (5, 10 and 15 wt.%) were also synthesized. We measured the current-voltage (I-V) curves for the conducting blend and its magnetite nanocomposite. We also measured their thermal stability, and performed kinetic analysis through thermogravimetric analysis. We observed that the three phase nanocomposites showed enhanced electrical conductivity compared with that of the conductive blend, and no electrical hysteresis.**

**The PVA/PANi blend was more stable above 350°C and the addition of**

**Fe<sub>3</sub>O<sub>4</sub> enhanced the thermal stability of the conductive blend. The apparent activation energy of the three phase nanocomposites was greater than those of both the pure PVA and PVA/PANi samples. These results suggest that such three phase nanocomposites could be used in a range of applications**