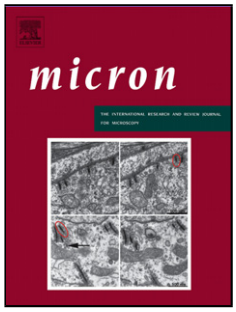

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PII: S0968-4328(17)30029-X
DOI: http://dx.doi.org/doi:10.1016/j.micron.2017.03.011
Reference: JMIC 2411

To appear in: *Micron*

Received date: 20-1-2017
Revised date: 14-3-2017
Accepted date: 14-3-2017

Please cite this article as: Ammar, Latifa Ben, Fakhfakh, Slim, Jbara, Omar, Rondot, Sebastien, Hadjadj, Aomar, Study of temperature effects on the electrical behavior of polypropylene-clay nanocomposites submitted to electron beam irradiation in a SEM.Micron http://dx.doi.org/10.1016/j.micron.2017.03.011

Study of temperature effects on the electrical behavior of polypropylene-clay nanocomposites submitted to electron beam irradiation in a SEM

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Highlights

- Influence of temperature on the space charge accumulation and discharge of in Polypropylene (PP0%) and its nanocomposites (NCs) with different contents of natural clay (PP2% and PP6%).
- A modified special device attached to the SEM able to measure simultaneously and separately the leakage and the displacement currents under controlled temperatures.
- Ability of Polymer nanocomposites (PNCs) to accumulate the charges decreases with temperature but at a given temperature, the trapped charge at steady state increases when the nanoclay content increases
- Effective mobility of charge carriers is higher for the nanocomposites until a concentration threshold and this difference accentuates at higher temperatures.
- Secondary electron emission (SEE) yield at the beginning of irradiation increases and then decreases as a function of temperature but at the saturation this yield decreases when the temperature increases.