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| **Published Researches****الأبحاث المنشورة** |
| Title**عنوان البحث** | * [Polypropylene/lignin/POSS nanocomposites: Thermal and wettability properties, application in water remediation](https://www.mdpi.com/1189034)
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| Author**الناشر** | * Abeer Alassod, Syed Rashedul Islam, Mina Shahriari Khalaji, Rogers Tusiime, Wanzhen Huang, Guangbiao Xu
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| Abstract**خلاصة** | * Compositing is an interesting strategy that has always been employed to introduce or enhance desired functionalities in material systems. In this paper, sponges containing polypropylene, lignin, and octavinyl-polyhedral oligomeric silsesquioxane (OV-POSS) were successfully prepared via an easy and elegant strategy called thermally induced phase separation (TIPS). To fully explore the behaviour of different components of prepared sponges, properties were characterized by a thermogravimetric analyser (TGA), differential scanning calorimetry (DSC), Fourier transform infrared measurement (FTIR), and scanning electron microscopy (SEM). Furthermore, wettability properties toward an organic liquid and oil were investigated. The FTIR analysis confirmed the chemical modification of the components. TGA and DSC measurements revealed thermal stability was much better with an increase in OV-POSS content. OV-POSS modified sponges exhibited ultra-hydrophobicity and high oleophilicity with water contact angles of more than 125°. The SEM revealed that POSS molecules acted as a support for reduced surface roughness. Moreover, OV-POSS-based blend sponges showed higher sorption capacities compared with other blend sponges without OV-POSS. The new blend sponges demonstrated a potential for use as sorbent engineering materials in water remediation.
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