

## **Metal Oxide Silica Cellulose Nano Fiber Polyethylene (CeMOSPE) Composite Material**

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### **Abstract**

Pulped baggase was used to produce cellulose nano fiber with high porosity. Sol-gel process was employed to obtain the metal oxide material (silica) and waste polythene material dissolved in a mixed solvent environment. The tensile strength and Young's modulus were enhanced with the increasing content of nano-silica. However, the elongation at break decreased as nano-silica content increased. The SEM micrograph shows the distribution of the silica within the polymer matrix. This natural-synthetic nano composite material with observed enhanced physio-mechanical properties, opens up another level of hybrid materials for the agricultural, landscaping, transport, automotive, building and construction industries.

**Key words.** cellulose nanofiber, Nano silica, solvated PE, Materials compatibility, composite,

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