

# **Study on the mechanical properties of PP/n-SiO<sub>2</sub> nanocomposites in addition of polysilane material.**

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PP/nano-SiO<sub>2</sub> composites were prepared by melt-mixing method with/without polysilane material, PMPS. From SEM observation results, the size of aggregated nano-SiO<sub>2</sub> particles in the PP matrix was getting smaller with an increase of the PMPS content. Moreover, the mechanical property of PP/nano-SiO<sub>2</sub> composites can be modified into the ductile property from the brittle one. Although HDT and gas barrier properties of PP/nano-SiO<sub>2</sub> composites in addition of PMPS up to 5 phr were better than PP/nano-SiO<sub>2</sub> composites, these properties were getting worse when adding PMPS more than 5 phr into the composites. This is because PMPS can enhance the molecular motion of the amorphous region of PP matrix and, so that, the free volume of the PP matrix increased in addition of PMPS. Also the results of PP-g-SiO<sub>2</sub>, modified with PP the surface of the nano-SiO<sub>2</sub> will be reported.