

## Comparison of Silica-Filled Rubber Compound Prepared from Unmodified and Modified Silica

**Authors :** Thirawudh Pongprayoon, Watcharin Rassamee

**Abstract :** Silica-filled natural rubber compounds were prepared from unmodified and surface-modified silica. The modified silica was coated by ultrathin film of polyisoprene by admicellar polymerization. FTIR and SEM were applied to characterize the modified silica. The cure, mechanic, and dynamics properties were investigated with the comparison of the compounds. Cure characterization of modified silica rubber compound was shorter than that of unmodified silica compound. Strength and abrasion resistance of modified silica compound were better than those of unmodified silica rubber compound. Wet grip and rolling resistance analyzed by DMA from  $\tan\delta$  at 0°C and 60°C using 5 Hz were also better than those of unmodified silica rubber compound.

**Keywords :** silica, admicellar polymerization, rubber compounds, mechanical properties, dynamic properties

**Conference Title :** ICCSE 2014 : International Conference on Chemical Science and Engineering

**Conference Location :** Venice, Italy

**Conference Dates :** August 14-15, 2014