



P-3-482

**LDH AS VERSATILE VULCANIZING ADDITIVE IN RUBBER NANOCOMPOSITES**

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Layered Double Hydroxides (LDHs) based on Zn and Mg as divalent cations and Al as trivalent cation were prepared using the co-precipitation method with in-situ organic modification by carboxylic acid salts. These organo-LDHs were dispersed into different polar and non-polar rubbers using Brabender type mixer. To the resulting compounds sulphur and tetramethyl thiuram disulfide (TMTD) were added on a two roll mill with a friction ratio of 1.25. Interestingly, the use of such an organo - LDHs in the rubber compound was found to be more efficient than a similarly prepared sample with classical recipe containing 5 phr of ZnO and stearic acid. Further investigation showed that the mechanical properties of vulcanized rubber compounds were at least the same, in case of polar rubbers even better than respective ZnO based rubbers. The concentration as well as the composition of the LDH influenced the vulcanizing reaction as determined by a moving die rheometer. In accelerated ageing experiments the loss of properties were reduced, probably because of a lower permeability to gases caused by the layered structure. The use of LDH therefore allows to drastically reduce the Zn content in a rubber vulcanizate and furthermore leads to transparent and durable rubber reducing environmental issues and safety issues e.g. tire applications at the same time.