Title: Processing and Characteristics of Rubber Composites: Structural Composites reinforcedwith functionalized carbon nanofibers and surface treatments

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Proposal

Human beings have been mixing various kinds of materials to produce necessary functions of materials since ancient times. A composite is a material mixing two or more kinds of materials whose performance is superior while original properties are physically and chemically maintained. Due to the highly specific mechanical properties of composite materials, many researchers have been developing new materialswhich can be applied to the various products favorable to the demand of consumers market.

Recently, many studies have been conducted on carbon fiber reinforced rubber composite (CFRR) using carbon fiber as a reinforcing material. Specially, Carbon nanofiber reinforced rubber composite (CNFRR) was prepared by using carbon nanofibers (CNFs) which surface modified with the various functional group or specific surface treatments suitable to the rubber/polymer matrix. Many researchers have also been investigated the basic physical properties and characteristicsof rubber composites along with the content of CNFsshowing the best resultin developing a variety of rubber composite materials. These set of research and developments will offerthe various applications for the current and future rubber/polymer market.

Potential topics include, but are not limited to:
1. Processing of structural rubber composites reinforced with carbon fibers
2. Characteristics of rubber composites reinforced with carbon nanofibers
3. Mechanical and thermal characterization of polymer composites
4. Surface treatment of rubber composites for reinforcements
5. Developments of polymeric materials for rubber composites
6. Study of the various characterization in polymer composites