

Deciphering the Mystery of Natural Rubber Properties

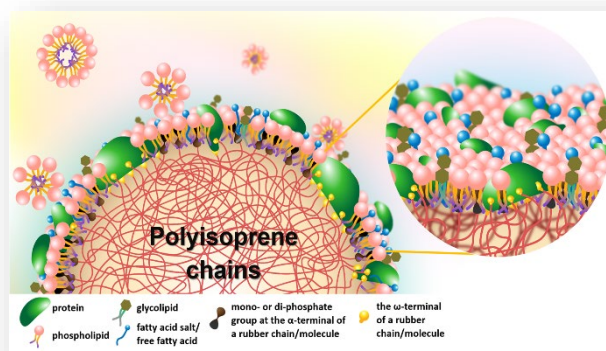
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Natural rubber (NR) latex from *Hevea brasiliensis* is a very important commercial source of elastomers. There are many higher plants to produce wild rubber having the same fundamental structure as NR, that is *cis*-1,4-polyisoprene, as well as synthetic *cis*-1,4 polyisoprene from a polymerization of isoprene monomer with Ziegler-Nata catalysts. However, only NR shows outstanding cured rubber properties and high green strength, in spite of the similarity of fundamental structure and molecular weight with those wild rubbers and synthetic polyisoprene. Therefore, a series of studies to decipher why NR shows such the outstanding properties, based on structural characterization by various techniques will be presented. It revealed the hierarchic multi-scaled structures as the natural crosslinking by association with proteins and phospholipids at both terminating ends and ultimately the contribution to the outstanding properties in NR. As well, advance techniques in surface analysis were consumed to visualize the new topological model of protein and lipid layers on the NR latex particle surface.

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The New Topological Rubber Particle Model

Author Biography: She achieved the Monbusho scholarship for her Master and Philosophy Degrees at Tokyo University of Agriculture and Technology. In 1996, she was admitted as lecturer at Department of Chemistry, Faculty of Science, MAHIDOL University and in 2011, she was promoted as a Professor in polymer Science.

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Research Interest: The structural characterization of natural rubber and understanding how to improve the chemical and physical properties of natural rubber.

