

## رتبه اول خارجی Foreign First Winner

**Project Title:**

Band Formation Behaviour of Rubber and Rubber Blends During Milling

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India

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**عنوان طرح:**

اصلاح سطح و اتصال عرضی الاستومرها با استفاده از تابش دهی با باریکه الکترونی

**محقق:**

دکتر آنیل ک. بهومیک

**کشور:**

هندوستان

**دانشگاه:**

مؤسسه فناوری هند، خارا کپور

**Abstract:**

Band formation behavior of natural rubber, styrene-butadiene rubber, polychloroprene rubber (CR), acrylic rubber (AR), epoxidized natural rubber and polybutadiene rubber has been carried out over a range of temperatures, 45-100 C, friction ratios (1.05-2.00) and filler loading (0-65 phr), in drop and continuous mill operations.

The critical nip gap increases with friction ratio for CR, and AR, but decreases with friction ratio for filled NR and ENR. A theoretical model based on dimensional analysis was developed to describe the behavior. The detailed rheological analysis of various rubbers show that they obey a power law model and exhibit pseudoplastic flow behavior. The tensile failure properties presented in the form of failure envelopes were correlated with the band formation behavior. The structural changes of elastomers during milling indicated a change in carbonyl groups for all rubbers.