A New Approach to the Epoxidation of Natural Rubber Through A Sonochemical Method

Natural rubber (NR) is widely used in products like tires, gloves, and elastic materials. Various methods have been employed to modify NR, enhancing its durability or imparting new properties. This study presents a faster and energy-saving method for modifying natural rubber using sound waves instead of heat. The technique, known as sonochemistry, utilizes ultrasonic sound to induce chemical changes in the rubber. The effects of reaction time and temperature on the epoxidation degree (EPD) were studied. The results showed that rubber modified by the sonochemical method reached the same level of modification (30% epoxidation) in just 1 hour at 30°C, compared to the traditional 6 hours at 60°C. This demonstrates the potential of the sonochemical method to replace the conventional approach for ENR synthesis, offering significant reductions in both temperature and reaction time.

The associated SDG goal is Responsible consumption and production (12).

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Reference:

Lorwanishpaisarn, N., Sae-Oui, P., **Sirisinha, C.,** Siriwong, C. A New Approach to the Epoxidation of Natural Rubber Through A Sonochemical Method, Industrial Crops and Products. 2023, 197, 116629.