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Yoshimasa Yamamoto, Siti Nadiah Binti Norulhuda, Phan Trung Nghia, Seiichi Kawahara



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## Thermal degradation of Deproteinized Natural Rubber

Yoshimasa Yamamoto<sup>1</sup>, Siti Nadiah Binti Norulhuda<sup>2</sup> and Phan Trung Nghia<sup>3</sup>,  
Seiichi Kawahara<sup>2\*</sup>,

1 National Institute of Technology, Tokyo College, 1220-2, Kunugida-machi,  
Hachioji, Tokyo 193-0997, Japan

2 Nagaoka University of Technology, 1603-1, Kamitomioka-machi, Nagaoka,  
Niigata 940-2188, Japan

3 Center for Rubber Science and Technology, Hanoi University of Science and  
Technology, No.1, Dai Co Viet Street, Hai Ba Trung District, Hanoi, Vietnam.

## Abstract:

Thermal degradation of deproteinized natural rubber (DPNR) was investigated by heating at 70 °C and 150 °C for 24 hours, which was compared with thermal oxidative degradation of natural rubber (NR). The DPNR was prepared by incubation of the NR latex with urea and sodium dodecyl sulfate at room temperature for an hour followed by centrifugation. FT-IR, <sup>1</sup>H-NMR and <sup>13</sup>C-NMR measurements revealed significant differences between DPNR and NR after degradation at 150 °C; that is, *cis*-1,4-isoprene units of the DPNR isomerized to *trans*-1,4-isoprene units and vinyl groups, whereas those of NR reacted with oxygen radical and hydroxyl radical generated functional groups. The difference was attributed to an existence of proteins present in the nanomatrix structure, which adsorbed oxygen and water.

Key words: natural rubber, deproteinized natural rubber, nanomatrix structure, degradation, protein, NMR

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