E2-38: Micro structure of radiation (gamma-irradiated) cross linked natural rubber latex

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In radiation (Pre) crosslinking of natural rubber latex, sensitizers are mixed with latex to reduce the dose to obtain optimum physical properties such as tensile strength, elongation at break etc.

Most of these sensitizers are monomers or chlorinated hydrocarbons. The distribution of the sensitizer within the latex particle is not understood as well as the crosslinked structure within the microsphere.

Therefore, precise control of the crosslinked structure of the final products seems to be a formidable task, except controlling overall crosslink density, by changing the absorbed dose, sensitizer and sensitizer concentration.

In this study, spin probed electron spin resonance spectroscopy(ESR) was used to obtain information about the microstructure of the irradiated natural rubber latex films and compared with uncrosslinked and sulphur crosslinked latex films.

In irradiation, crosslinking surface of the latex particle was more crosslinked than the inner part. Therefore the final product has an inhomogeneous crosslink structure.