

[J. Photopolym. Sci. Technol., 7, 315-318 (1994)]

[Lab. of Pharm. Physical Chemistry]

Mechanochemical Reactions of Plasma-Induced Surface Radicals on Polyethylene.

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Solid state radical recombination on plasma-irradiated polymeric powders, resulting from application of mechanical energy, was examined for a plasma-irradiated high density polyethylene based on the observation of ESR spectra. It is seen that the spectral intensity gradually decreased with change of the spectral pattern as the duration of vibratory milling increased, and that the decrease in the spectral intensity depends on the frequency of the vibratory milling. It can be seen that the sextet spectrum of the midchain alkyl radical decays with much a faster rate than the spectra of allylic radical and dangling bond sites. The decay curve of the sextet spectrum indicated that the dissipation of the midchain alkyl radical follows a bimolecular reaction.

[Bunseki Kagaku, 43, 403-408 (1994)]

[Lab. of Pharm. Analytical Chemistry]

Development of Micro-Enzyme Electrode for Detection of Acetylcholine and Choline.

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Two kinds of simple, micro-enzyme electrodes were devised for a more highly sensitive detection of acetylcholine and choline. The first electrode was made by directly cross-linking acetylcholinesterase (AChE) and choline oxidase (ChO) using glutaraldehyde vapor on a micro platinum disk. The second electrode was made by cross-linking with glutaraldehyde vapor after adsorbing AChE and ChO into platinum black particles. By micro flow injection analysis the amperometric performance of the first electrode was found to be better than that of the second one. The detection limit was 20 fmol for acetylcholine and 10 fmol for choline in the first electrode.

[Bunseki Kagaku, 43, 505-509 (1994)]

[Lab. of Pharm. Analytical Chemistry]

Development of a Flow Injection Method Based on Bromometry and Iodometry for the Analysis of Medicinal Drugs such as Isoniazid and Ascorbic Acid.

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For the rapid analysis of medicinal drugs by bromometry and iodometry in the Japanese Pharmacopoeia method, a flow injection method with amperometric detection was developed. The component contents in isoniazid tablets, sodium thiosulfate injections, and ascorbic acid injections were analyzed by the proposed method and the Japanese Pharmacopoeia method. The analytical results compared well with each other. A throughput of as many as 30 samples per hour was reached in the proposed method.