

[Nippon Kagakukaishi, **1995**, 939-947]

[Lab. of Pharm. Analytical Chemistry]

**Energetics of Sequential Electrode Process in Nonaqueous Solvents and Intermolecular Interaction of the Electrogenerated Active Species.**

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The equations and the mutual relations pertinent to the energetics of sequential electrooxidation and reduction steps were formulated from the points of view of the Born-Haber-type thermodynamic energy cycle and SCFMO calculations. The theoretical treatment was extended to the energetics of the electrooxidation and reduction process in excited states. The electron-transfer interaction between an electron donor and an electron acceptor has been considered in photoexcited states by virtue of oxidation and reduction potentials. Finally, hydrophobic and electron donor-acceptor interactions of electrogenerated active species were elucidated.

[J. Chromatogr. A, **711**, 305-311 (1995)]

[Lab. Pharm. Analytical Chemistry]

**Hydrogen-bonding Interaction in Capillary electrophoresis Using Polyether Matrices.**

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PEG serves as a novel matrix in capillary electrophoresis. An increase in the column temperature resulted in a significant decrease in the interaction between PEG in the separation system and substituted benzoic acids with hydrogen-donating groups as model analytes. Addition of urea suppressed the interaction. NMR spectra of phenol and salicylic acid in the presence of PEG in  $C^2HCl_3$  showed a hydrogen-bonding interaction between the hydroxyl protons of the analytes and PEG. These results strongly support the contention that hydrogen-bonding interaction between the polyether segments of PEG and the hydrogen-donating groups of analytes occurs in the separation system.

[Drug Delivery System, **10**, 115-119 (1995)]

[Lab. Of Pharm. Engineering]

**Formulation of w/o/w lipiodol emulsion encapsulating epirubicin hydrochloride for the transcatheter arterial embolization therapy for hepatocellular carcinoma.**

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Lipiodol (LPD) is widely used as an oily contrast medium and an embolizing material for transcatheter arterial embolization (TAE) therapy for hepatocellular carcinoma. We developed the LPD w/o/w emulsion encapsulating EPI by using a two-step pumping emulsification procedure. It was found that a large amount of the aqueous drug solution was encapsulated in the resultant w/o/w emulsion and the drug release profile from emulsion showed a sustained release pattern. The hemolysis induced by the w/o/w emulsion was much depressed compared to the conventional o/w emulsion.