[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.

BUNJI UNO*, KENJI KANO, NORIKO OKUMURA, TANEKAZU KUBOTA

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.

YUKIHIRO ESAKA*, MASASHI GOTO, TOKUJI IKEDA, KENJI KANO

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.

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

TOMOAKI HINO, HIROFUMI TAKEUCHI, TOSHIYUKI NINA, Kazumasa NAGAYA, YOSHIAKI KAWASHIMA*, SATOSHI NAKANO, FUTOSHI YAMAZAKI, TAKASHI KUMADA

Lipiodol (LPD) is widely used as an oily contrast medium and an embolizing material for transcathether 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.