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[Lab. of Pharm. Synthetic Chemistry]

**Alcoholysis of Epoxides Catalyzed by Tetracyanoethylene**

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A  $\pi$ -acid, tetracyanoethylene was found to catalyze alcoholysis of epoxides at the ambient temperature to 40°C in good yields. The stereospecific anti-opening and favorable chemoselectivity without cleavage of tetrahydropyranyl ether and ethylene acetal groups were demonstrated. In the reaction of terminal and 1,2-disubstituted epoxides, a novel regioselective opening reaction associated with anchimeric assistance of the ethereal group in the side chain was observed.

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[Lab. of Pharm. Physical Chemistry]

**A Novel Single Electron Transfer in Solid-State Organic Compounds : Mechanically-Induced Reduction of Dipyridinium Salts**

MASAYUKI KUZUYA\*, SHIN-ICHI KONDO, KATSUYUKI MURASE

When mechanical vibration of each seven dipyridinium dications was conducted with a stainless steel ball in a stainless steel-made twin-shell blender for 30 min at room temperature under strictly anaerobic conditions, the powder surfaces of four derivatives turned to a deep blue-purple in color, and nearly isotropic broad single-line ESR spectra were observed in the resulting powders, which can be ascribed to the formation of the corresponding monocation radicals resulting from a solid-state single electron transfer (SSET). The mechanically induced SSET seems to be a general phenomenon for many organic compounds with relatively low redox potentials and is of special significance in connection with manufacturing a variety of solid materials in pulverized form in a metallic vessel in the entire field of industry.

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**Observation of Counterpart Radical on Main-Chain Scission in Plasma-Irradiated Methacrylic Polymers.**

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We describe the extended study of plasma-induced radicals in two methacrylic polymers which were strictly dried at higher temperature and for a longer time than before. It has been shown that the present electron spin resonance (ESR) spectra of plasma-irradiated methacrylic polymers are appreciably different from those observed previously, and are characterized by the presence of many small peaks on the outer side of major peaks. Computer simulations disclosed that the difference is caused by the presence of a fifteen-line component spectrum of a previously unobserved radical which should be produced by the addition of hydrogen radical to the counterpart isobutene-like moiety of the terminating radical.