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## PREPARATION AND SYNTHETIC UTILITY OF FLUORINATED PHOSPHONIUM SALTS, BISPHOSPHONIUM SALTS AND PHOSPHORANIUM SALTS

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The synthesis and mechanism of formation of phosphonium salts of the type  $[R_3PCFXY]Z^+$  (where X = F, Cl, Br; Y = Br, Cl; Z = Br, Cl), bis-phosphonium salts of the type  $[R_3PCF_2PR_3]2Br^+$ , and phosphoranium salts of the type  $[R_3P-CF-PR_3]X^-$  (X = Br, Cl) will be presented. The applicability of these substrates in the generation of useful nucleophilic or electrophilic synthetic intermediates will be discussed.

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## PREPARATION AND EVALUATION OF BRANCHED BIS(F-ALKYL)ETHENES AS O<sub>2</sub>/CO<sub>2</sub> CARRIERS FOR BLOOD SUBSTITUTES

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Bis(*F*-butyl)ethene has proved to be a promising candidate oxygen-carrier for blood substitutes on the basis of the following criteria<sup>1,2</sup>: purity, definition and industrial feasibility; O<sub>2</sub>/CO<sub>2</sub> dissolving capacity; chemical and biological inertness; expiratory rate. The stability of its emulsions, when Pluronic F-68 and yolk phospholipids are used as surfactants, is comparable to that of Fluosol-DA. The issue on which most efforts must now be focussed in achieving second-generation blood substitutes is the improvement of their long-term stability. A new homologous series of bis(*F*-alkyl)ethenes, having one or two *F*-isopropyl chains, has been prepared in our search for the optimum compromise between emulsion stability (which is known to increase with the total number of carbon atoms) and excretion rate (which is negatively affected by this factor, but was shown to be improved by branching)<sup>2</sup>. These compounds were prepared in a high state of purity by addition of *F*-alkyl iodides to 1-*F*-alkylethenes followed by dehydroiodation. The *trans* isomer is formed almost exclusively. Their resistance towards chemical, biomimetic and biological agents, and physicochemical and biological characteristics, including preliminary data on emulsion stability and excretion rate, will be discussed.

1 M.LE BLANC and J.G.RIESS, Acc.V<sup>th</sup> Intl.Symp.on Perfluorochemical Blood Substitutes, Mainz, RFA, March 1981 (Zuckschwerdt Verlag, München, p.43, 1982);

2 K.YOKOYAMA, C.FUKAYA, Y.TSUDA, T.SUYAMA and R.NAITO, Symp.on Organofluorine Compounds in Medicine and Biology, ACS National Meeting, Las Vegas, March 1982.