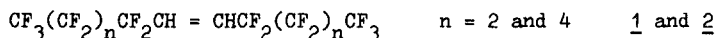


ESR-MEASUREMENTS ON RADICALS GENERATED IN PERFLUOROCARBONS

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Perfluorocarbons (PFC) are well-known as compounds useful as blood substitutes. Because of immiscibility in water PFC can only be used as O/W-emulsions. Therefore emulsions stable over a long period of time are necessary. For this reason attempts to determine structure-property relationships and the chemical behaviour are required. An interesting class of compounds which should be included are highly fluorinated olefines like 1 and 2. According to Riess [1] these compounds are supposed to belong to the second generation of blood substitutes.



The existence of the double bond, perhaps comparable to a heteroatom, appears to favour emulsion stability. The lack of chemical inertness of the double bond, however, could effect toxicity in medical application. Therefore chemical reactions of 1 and 2 were investigated, which had been started by γ -radiation and UV-irradiation, respectively. Different mechanisms have to be taken into account for variable conditions e.g. temperature from 77 to 300 K, presence of oxygen. The following radicals were detected by ESR: primary radicals of 1 and 2, different types of peroxyradicals and of aggregates. Under UV-excitation at 300 K the concentration of paramagnetic species observed by cw-ESR depends strongly on experimental conditions: wavelength of excitation, exposure time and the presence of an sensitizing agent. Consequences of the above-mentioned questions are discussed.