

## ASPECTS OF CHEMICAL AND PHYSICAL PROPERTIES OF PERFLUORO-CHEMICALS AND THEIR EMULSIONS

Hasso Meinert\*, Udo Gross, Michael Kupfer, Stephan Rüdiger and Lothar Kolditz

Zentralinstitut für Anorganische Chemie der Akademie der Wissenschaften der DDR,  
1199 Berlin-Adlershof, Rudower Chaussee 5 (G.D.R.)

Perfluorochemicals (PFCs) dissolve ca. 40 - 50 vol % of oxygen and ca. 100 - 150 vol % of carbon dioxide. According to experiments and calculations, the physical solubility of oxygen cannot exceed 60 vol %. Emulsions of perfluorochemicals are used as oxygen carriers instead of blood. The surfactant most frequently used is Pluronic F-68, often with adjunction of yolk phospholipids, as in the case of Fluosol DA. These emulsions are difficult to formulate, it requires a high amount of energy, ultrasonic vibrations or pressure homogenization for instance, and a certain concentration of free surfactant. Even then stability is not assured, and the emulsions must be stored frozen. PFCs containing heteroatoms, especially in cyclic molecules form more stable emulsions. Therefore tailor-made PFCs are of interest. The possibilities for synthesis of these compounds are limited. By application of more effective surfactants emulsions can be prepared with contents of PFCs up to 50 vol %. These emulsions enable a better O<sub>2</sub>-delivery and have lower viscosities and smaller particle sizes.