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2006 Program

Small Business Technology Transfer (1-year project)

Project Title: A Micro-Fabricated in Vivo Bubble Oxygenator for the Treatment of Induced Severe Pulmonary Disease

Project Summary: Oxylation, LLC, and the Florida International University Biomedical Engineering Department will establish the performance capabilities of a new and novel, in vivo, oxygen bubble catheter system for the treatment of tobacco smoke induced lung diseases. Utilizing the initial oxygenation concept created by Dr. Lary, Scientific Advisor of Oxylation, this dynamic team will utilize new technologies to accomplish these specific objectives:
(1) Production and evaluation of oxygen microbubbles
(2) Implement and investigate a method for surfactant incorporation
(3) Configure an optimal design for supplying goaled volumetric output rate of oxygen

Advances in micro- and nano-machining, materials science, and fabrication techniques will be employed during this feasibility stage of development. Once the performance capabilities of the oxygen bubble catheter system have been established by this project, a detailed product development plan and a product requirements specification will be created. The development effort will then begin to bring a product to market.

Past designs contain many of the desired elements for such a product. However, none have “put it all together” to accomplish the real goal of supplying the body with its oxygen needs when the lungs are damaged or diseased. The proposed oxygen bubble catheter system, (OBCS – pronounced “O-BOX”), integrates the attributes of past designs with Oxylation’s novel surfactant concepts to achieve the goal of 120 ml/min of oxygen into the blood stream. This will be the main measurement of success of this research program.