

Study on the Anti-Biofouling Property of Perfluoropolyether(PFPE) Treated Surfaces

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Biofouling makes lots of troubles in maintaining ship or marine structures causing rise of maintenance cost. Generally, biofouling is caused by adsorption and reproduce of marine organisms such as barnacles on the surface of the object submerged in ocean. Thus, it is very important to prevent adsorption of marine organism on the surface. A fluoropolymer of perfluoropolyether(PFPE) attracts lots of interests for its unique properties. It has a low surface energy and shows hydrophobicity and olephobicity together. These properties can be used to prevent biofouling. To evaluate the performance, PFPE surfaces compared with the PDMS surface, the bare gold and carboxyl group substituted surface. In the marine environment, degree of a barnacle cell adsorption to the each surface was compared through fluorescence microscopy. PFPE surface is superior to the other surfaces in prevention of biofouling. In addition, Cleaning experiments show that PFPE surface is easy to remove the pollutants. These results suggest that PFPE is a promising material and is applicable to many areas such as medical equipment.