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Development of FDR-AF (Frictional Drag Reduction Anti-Fouling) Marine Coating[1] INWON LEE, HYUN PARK, HO HWAN CHUN, GCRC-SOP, Pusan National University, GCRC-SOP TEAM — In this study, a novel skin-friction reducing marine paint has been developed by mixing fine powder of PEO(PolyEthyleneOxide) with SPC (Self-Polishing Copolymer) AF (Anti-Fouling) paint. The PEO is well known as one of drag reducing agent to exhibit Toms effect, the attenuation of turbulent flows by long chain polymer molecules in the near wall region. The frictional drag reduction has been implemented by injecting such polymer solutions to liquid flows. However, the injection holes have been a significant obstacle to marine application. The present PEO-containing marine paint is proposed as an alternative to realize Toms effect without any hole on the ship surface. The erosion mechanism of SPC paint resin and the subsequent dissolution of PEO enable the controlled release of PEO solution from the coating. Various tests such as towing tank drag measurement of flat plate and turbulence measurement in circulating water tunnel demonstrated over 10% frictional drag reduction compared with conventional AF paint.

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