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Effect of plasma polymerized film on fouling of heat exchangers

Ki-Hwan Kim, Sung Chang Choi, Doo-Jin Choi*, Hyung Jin Jung, SamChul Ha**, Chul-Hwan Kim**, and Seok-Keun Koh

Thin Film Technology Research Center, Korea Institute of Science and Technology, P. O. Box 131, Cheongryang, Seoul, 130-650, Korea,

*Department of Ceramic Engineering, Yonsei University,

**LG Electronics Inc. Living System Lab. Changwon, Kyung-Nam, 641-315, Korea

To reduce the fouling of heat exchangers, the plasma polymerized films was coated on the heat exchangers, and an effect of plasma polymerized film on fouling of heat exchangers was investigated. Monomer and reactive gases were used as the precursors of plasma polymerization. Plasma polymerized films were deposited with process parameters of pressure, power, and ratio of gases. Plasma polymerized films could be served as functional layers of good wettability and high resistance to corrosion. Wettability of plasma polymerized film could be controlled by the ratio change gas mixture. Hydrophilicity of plasma polymerized films on heat exchanger in air conditioner can provide improvement in performance of heat exchanger which results from good water drainage, decrease of pressure drop. DC-plasma polymerized films improve resistance to corrosion which is related to deposit formation in heat exchangers. The difference in the build up of fouling deposits between bare substrate and plasma polymerized substrate was investigated by scanning electron microscopy (SEM). An effect of plasma polymerized film on fouling of heat exchangers was discussed in terms of surface properties such as wettability, surface chemical state.