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A Novel Fabrication Method of Organic Multilayer Film by Using 7-Octenyltrichlorosilane

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Organic multilayers of 7-octenyltrichlorosilane (CH_2=$CH_2(CH_2)_6SiCl_3$, V-OTS) have been prepared on SiO_2, TiO_2, Al_2O_3 and others metal oxides substrates. Film thickness was controlled by repeated cycles of self-assembled monolayers(SAMs) in a nonaqueous solvent containing V-OTS and gas-phase ozone(O_3) treatment in atmosphere. We have used the new activation method that reactions between ozone and C=C functional group proceed through the formation of carboxylic acid moiety and than they were subsequently converts to an interchain carboxylic acid anhydride. Organic multilayers were investigated by using X-ray photoelectron spectroscopy(XPS) and contact angle analysis, atomic force microscopy(AFM) and transmission electron microscopy(TEM).