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Preparation and characterization of TiO_2-SiO_2 composite films on plastics using aqueous peroxotitanium acid solution

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ABSTRACT

Aqueous peroxotitanium acid solution was prepared by the reaction between H_2O_2 solution and TiO_2 fluorinated using F_2 gas. The coating of TiO_2/SiO_2 multilayer on the surface of polycarbonate (PC) resin was carried out step by step using the TEOS solution and aqueous peroxotitanium acid solution. We confirmed each formation of SiO_2 and TiO_2 layer by scanning electron microscopy and energy-dispersive X-ray spectroscopy and x-ray photoelectron spectroscopy results. Moreover, the surface fluorination of the SiO_2 layer can promote the formation of the TiO_2 layer on the surface.

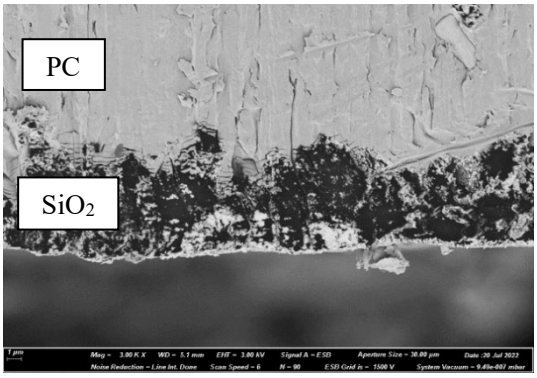

Fig.1 FE-SEM image of cross section of SiO_2 coated PC

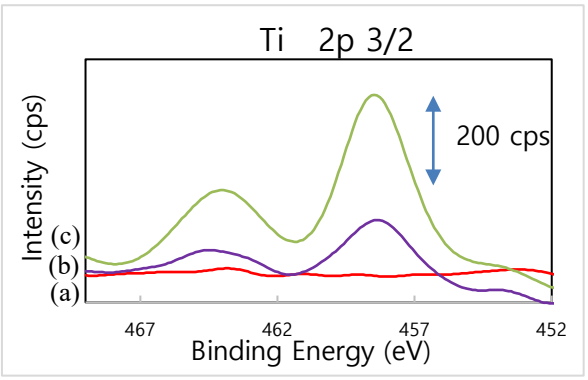

Fig. 2 XPS results of TiO_2 layer prepared from (a)untreated (b)TiO_2 240s immersion (c) F_2 100Torr +TiO_2 240s immersion

REFERENCES

Hiromitsu Kozuka *(2010)*, “Fundamentals of sol-gel coating technique”, *New Glass*, **25(3)**, *40-45.*

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