

### FT-IR Analysis for Reaction Mechanism of Titanium Isopropoxide with Acetic Acid

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The chemical modification reaction mechanism of titanium isopropoxide by acetic acid was investigated by using a FT-IR spectroscopy and the reaction mechanism was summarized by the five chemical reactions: 1) As soon as TIP was mixed with AcOH, TIP was found to be modified by AcOH with producing IPOH. 2) Esterification reaction was found to occur by a 'transesterification' reaction rather than a 'direct esterification' reaction. IPOAcE and oxo bridge were formed by the esterification reaction at molecular level (Ti-OPI + AcO-Ti) and 3) IPOAcE and hydroxyl groups were produced by another esterification reaction (Ti-OAc + IPOH), 4) alcohol forming condensation reaction was occurred between Ti-OH and IPO-Ti and 5) esterification reaction in oligomers was occurred