

CHAPTER V

CONCLUSIONS

Media polarity effect reveals that polar media system gives more chemisorbed amount of silane than nonpolar media system. In the case of water media, the chemisorption is highest because the silane is hydrolyzed effectively by water and the condensation onto silica surface is progressed significantly. Comparing the alcohol to nonpolar media, since hydrolysis reaction is significant in the alcohol media, the chemisorption is predominant. In the nonpolar media, small amount of silane hydrolyzates is formed leading the main adsorption of silane to be physisorbed one.

For the silane concentration effect, chemisorbed silane increases with silane concentration until the saturation point. The fluctuation after the saturated point may be due to the higher molecular weight species as dimer, trimer or oligomer chemisorbed silane. The saturation point of chemisorbed silane in polar media requires less silane amount than that in nonpolar media. This may be due to the large aggregate of silica in nonpolar media system which gives mostly physisorbed silane, meanwhile it is rather be individual silica particles in polar media which cause chemisorption. As a result, it is found that a relatively high silane amount is required to reach the saturation point in the nonpolar media system.