CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

This work examined the formation of ultrathin titania films on mica via admicellar polymerization. EDS analysis showed the evidence of Ti on mica. AFM imaging revealed the important role of the presence of surfactant on titania film formation. Triton X-100® appeared to help titania particles adhere to the mica as well as retarded the hydrolysis rate of the examined precursors, TBOT and TIPP. Smooth and well-connected titania particles were fabricated on the entire substrate. Reaction time, precursor concentration and type of precursor were all shown to be important factors in producing a smooth and homogeneous titania film. The titania film can be seen after reaction time as short as 10 minutes. Longer reaction time can provide higher number and larger size of titania particles on the substrate. Studying the growth rate of the titania particles indicated that the titania film was formed on the substrate by adsolubilized precursor. High concentrations of precursor can cause large particles to form on the surface and produce a heterogeneous film. The two precursors produced different film / particle characteristics, with TIPP forming larger titania particles than TBOT. This is believed to be due to the higher hydrolysis rate of TIPP over TBOT.

In order to facilitate the formation of a true thin film, the next step of this work should study on the homogeneity of film and also change the substrate from mica to a substrate with greater surface area such as glass beads. This substrate may provide enough surface area for characterizing the film formed with regards to surface area. For the characterization method, XRD should be used since it can analyze both the composition and crystallinity of the formed film.