



CHAPTER V

CONCLUSIONS AND RECOMMENDATION

5.1 Conclusions

5.1.1 Fabrication of AuNPs thin film

AuNPs scarcely deposited on MPTMS-modified substrate, while uniform monolayer coating of AuNPs was observed on APTMS-modified surface. For PEI-modified surface, AuNPs surface coverage was much higher than that of APTMS-modified surface. The peel test has shown that the adhesion of the AuNPs film on PEI-modified surface is superior than that on APTMS-modified surface.

5.1.2 Varying deposition conditions

1. AuNPs density is decreased when concentration of the modifying agent is increased because of self-polymerization to form sub-micrometer sized particles, which reduces the number of functional groups in the modifying agent.
2. The amount of AuNPs deposited is increased with surface modification time.
3. The AuNPs deposition time has small effect on the deposition of AuNPs monolayer when the deposition time is more than 4 hours, since number of the AuNPs deposited on the modified surfaces has reached the maximum capacity of the functional groups of the modifying agent anchoring on the surface.
4. Particle size of the deposited AuNPs is by sintering after heat treatment.

5.2 Recommendation for Future Work

Some recommendations for future work are listed as follows:

(1) Fabrication of gold nanoparticles multilayer thin film

Gold nanoparticles thin films in this work are not conductive, because the gold nanoparticles do not perfectly cover the surfaces. If the gold nanoparticles thin film is multilayer, it could be conductive.

(2) Reducing time for surface modification and AuNPs deposition

Because the time required for surface modification and AuNPs deposition in this research is too long, it is not feasible to apply in industry. Reducing those time is necessary.