CHAPTER V

CONCLUSION

The Fmoc-*aeg*PNA monomers (thymine and 3,6-disubstituted carbazoles) monomers were successfully synthesized by following the standard coupling reaction with HATU/2,6-lutidine and TBTU/HOBt as the coupling agent. Additionally, *ss aeg*PNA oligomers have been successfully prepared *via* manual solid phase synthesis on 1 μmole scale MBHA resin. For immobilization step, *ss aeg*PNA oligomers coated onto novel electrophilic MNPs can be successfully prepared under nitrogen atmosphere *via* ring-opening reaction. The 1:1 ratio of MNPs and *aeg*PNA oligomers produced the maximum yield of immobilization.

Immobilization of homothymine *aeg*PNA dimer, tetramer, and hxamer onto MNPs showed no significant difference on immobilization. On the other hand, homothymine *aeg*PNA octamer presented a drastic decreased of the immobilization. By increasing reaction time of homothymine *aeg*PNA octamer can increase yield of immobilization.

Furthermore, *ss aeg*PNA oligomers containing universal bases (carbazole, 3,6-dicyanocarbazole, and 3,6-dinitrocarbazole) exhibited no significant difference on immobilization regardless of size and steric congestion. Therefore, this could possibly make the *ss aeg*PNA oligomers-MNPs probes became practical for DNA diagnostic tools.

For the future, PNA-MNPs probe will be combine fluorescence spectrometry due to high sensitivity and measured using Rhodamine 6G fluorescence marker for DNA sequencing (Figure 47).

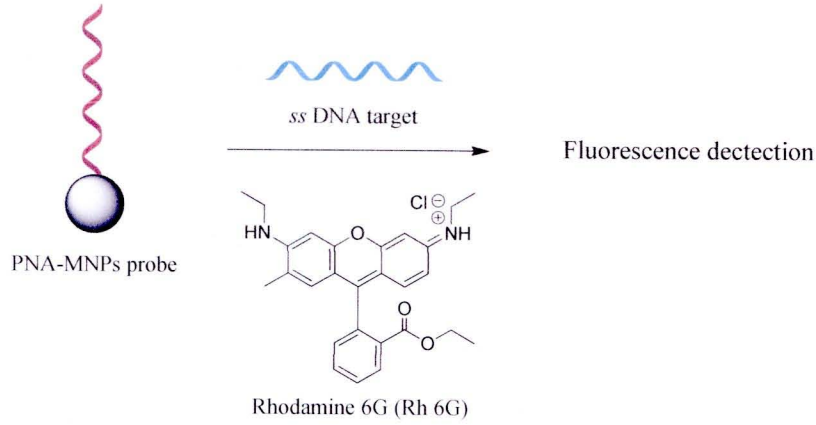

Figure 47 Approach to use PNA-MNPs probe for DNA diagnostic tools