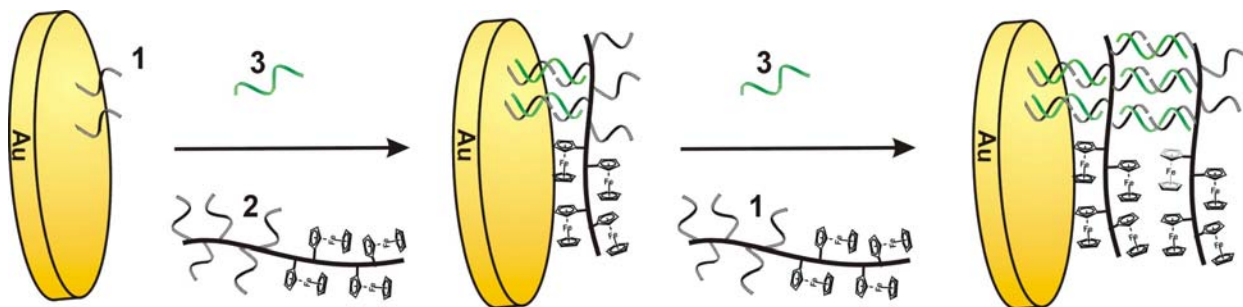


DNA-BLOCK COPOLYMER CONJUGATES AS PROBES FOR DNA DETECTION

Park, S. J.; Gibbs, J. M.; Anderson, D. R.; Watson, K. J.; Ihm, J. H.; Mirkin, C. A.; Nguyen, S. T., "Polymer – DNA Hybrids as Electrochemical Probes for the Detection of DNA," *J. Am. Chem. Soc.*, **2005**, 127, 1770-1178.

The syntheses of several norbornene block copolymers containing oligonucleotide and ferrocene side chains and their use in the electrochemical detection of DNA have been accomplished. Two kinds of DNA-containing block copolymers with either ferrocene or dibromoferrocene were prepared via ring opening metathesis polymerization (ROMP). Based on these two distinct ferrocene derivatives, a triblock copolymer labeling strategy was developed. With this strategy, the identity of the DNA target can be determined by the redox potentials of the ferrocene moieties and the ratio of peak currents. These polymers exhibit predictable and tailorable electrochemical properties, high DNA duplex stability, and unusually sharp melting transitions, which are highly desirable characteristics for DNA detection applications. Significantly, single base mismatches could be easily detected using two distinct block copolymers as dual channel detection probes in an electrochemical DNA detection format. The practical application for the technology would include detection of genetic defects and detection of viral and bacterial infections.



- 1 3' CCT AAT AAC AAT 5'
- 2 3' TTA TAA CTA TTC CTA T₃ 5'
- 3 5' GGA TTA TTG TTAAAT ATT GAT AAG GAT 3'

