

Study of the Interactions of Pyrene- Labeled SNPs with Sodium Dodecyl Sulfate (SDS)

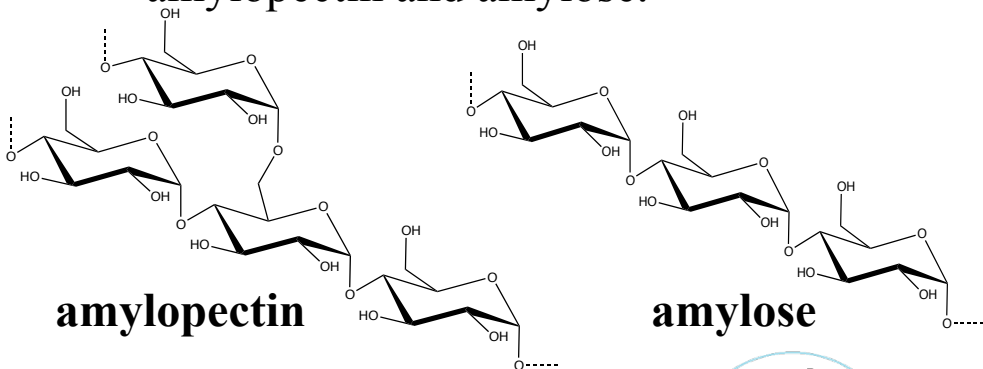
IPR

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May 3rd, 2017

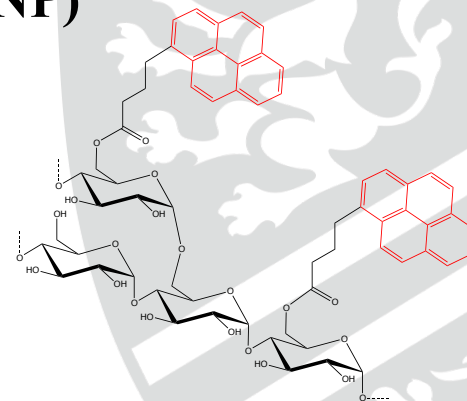
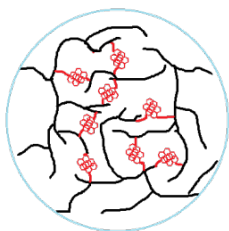
Interactions of Pyrene-Labeled SNPs with SDS

• Structure of Pyrene-Labeled Starch Nanoparticle (Py-SNP)

The two components of starch are amylopectin and amylose.



In this experiment, the starch nanoparticles are made of amylopectin



The Py-SNP are synthesized by Lu Li in Prof. Duhamel's group

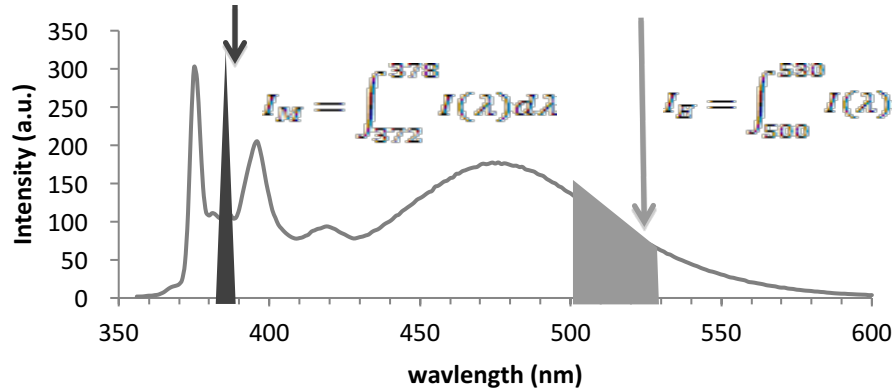
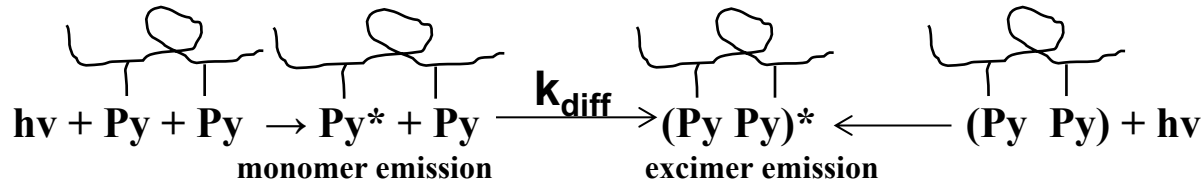
- The hydrophobic pyrene labels forms hydrophobic aggregates inside the particle
- The Py-SNP is stabilized by hydrophilic branches of amylopectin stretching outside the particle

» **Background** Py-SNP

Interactions of Pyrene-Labeled SNPs with SDS

- Pyrene Fluorescence

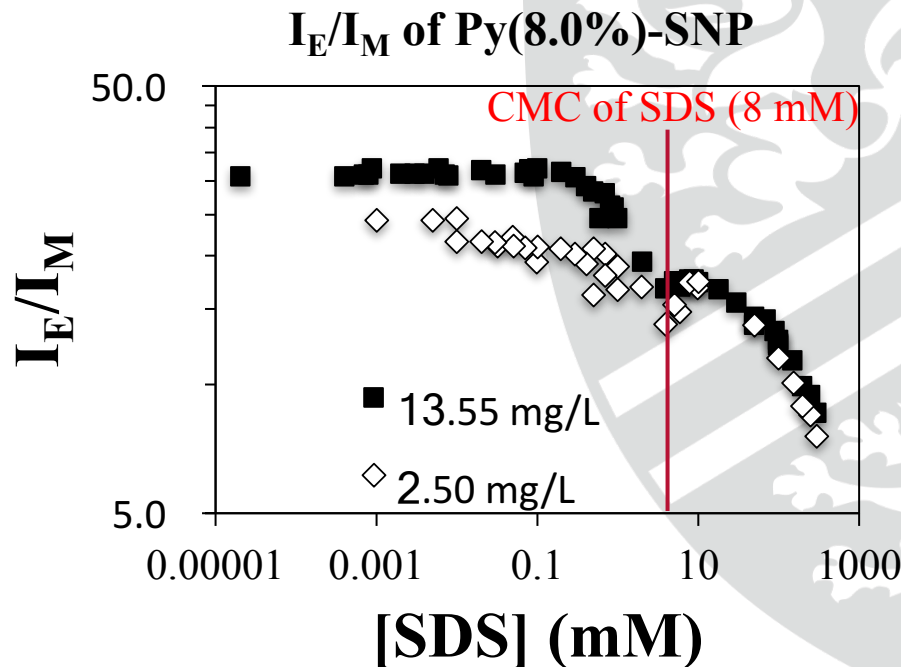
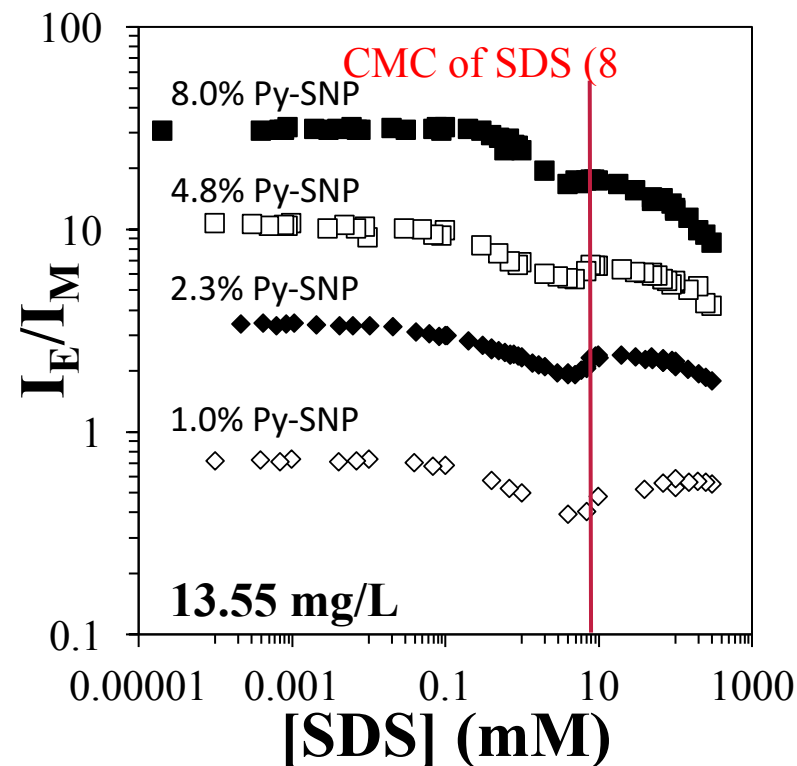
Pyrene fluorescence can be detected with a steady-state fluorometer



$$\frac{I_E}{I_M} \propto k_{\text{diff}} \times [\text{Py}]_{\text{local}}$$

The I_E/I_M ratio measures the relative amount of pyrene excimer being produced

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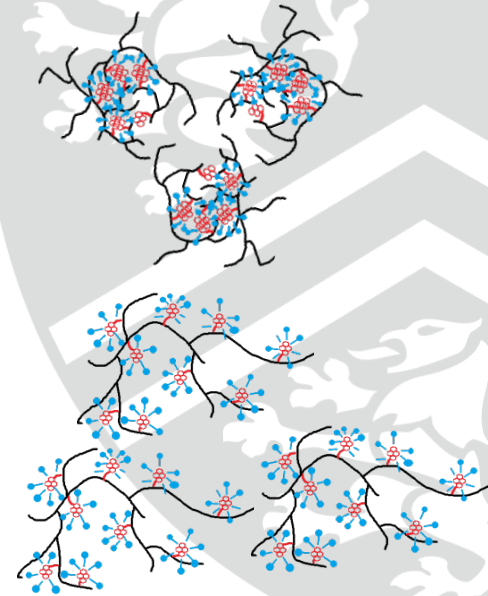
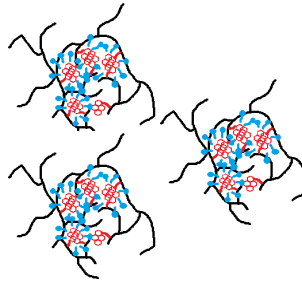
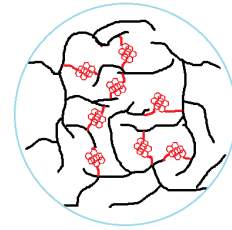
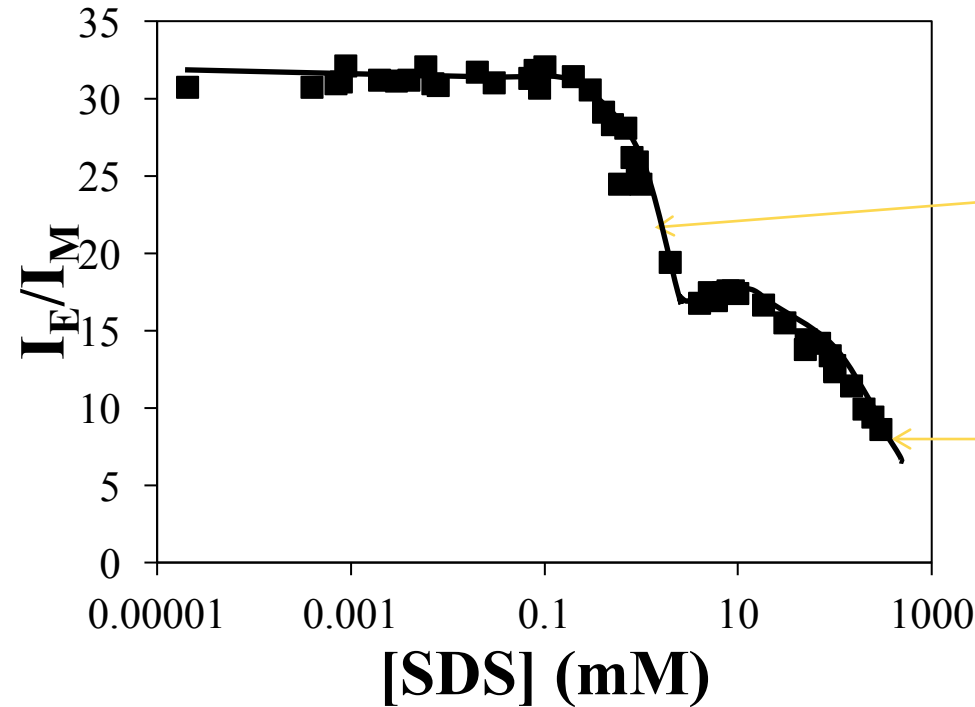


For [SDS] below 8 mM, the Py-SNP are strongly aggregated:

- Low [Py-SNP]: intra-molecular aggregation
- High [Py-SNP]: intra- and intermolecular aggregation

Results Steady-State Fluorescence

Interactions of Pyrene-Labeled SNPs with SDS



Conclusions

Acknowledgements

- Prof. Jean Duhamel
- Lu Li
- Members of Duhamel and Gauthier's group

