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## Entrapment of CdTe Quantum Dots in Polymeric Micelles

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### Abstract:

Semiconductor quantum dots (QDs) have attracted increasing interest to their unique size-dependent optical and electronic properties. Some of the most promising applications are imaging and biological sensing, acting as fluorescent probes.[1] However, for these purposes QDs need to be attached to other species. Thus, amphiphilic polymers, displaying both hydrophobic and hydrophilic regions, are interesting systems to encapsulate QDs.[2] The entrapment of hydrophobic QDs into surfactant micelles results in the formation of fluorescent nanoparticles composed by a QD core and a surfactant shell. This results in improved QDs dispersion in biological environments, lowering their toxicity.

The present work investigates the entrapment of CdTe QDs in micelles formed by poly(acrylic acid) macroRAFT (PAA), a new water soluble amphiphilic polymer. The results obtained indicate that the PAA/QDs ration plays an important role not only in the dispersion of the nanoparticles in aqueous systems but also in the optical properties of the QDs.

### References

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2. Li, H., et al., Gemini surfactant for fluorescent and stable quantum dots in aqueous solution. *Nanotechnology*, 2007. **18**(20): p. 205603-205608.