



# Peptoid Functionalized Nanoparticles for In-Line Contaminant Sensing

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Biological Sensors

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## Background/Relevance

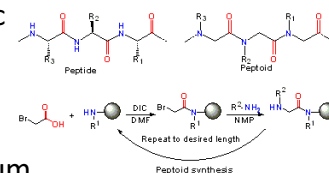
- Peptoids with certain arrangements of side chains have been shown to bind to various heavy metal and halogen contaminants with high specificity.
- Nanoparticles (NPs) can be functionalized with peptoids to create peptoid-functionalized NPs (FNPs). These can be used along with characterization tools to create a sensor that can detect these contaminants quickly and efficiently.

## Innovation

- Functionalize nanoparticles using peptoids with specific side chains and investigate property changed as a function of contamination.
- Find specific side chain arrangements to bind to contaminants.

## Approach

- Synthesize peptoids that bind to specific contaminants.
- Functionalize NPs with peptoids to get FNPs.
- Examine how FNPs interact with cadmium.
- Examine properties of contaminant solutions before and after treatment with PNP to confirm a removal of contaminants.
- Examine properties of PNP solution before and after treatment to measure common characterization tests as a function of concentration.
- Examine PNP and solution of multiple contaminants to confirm specificity of results.

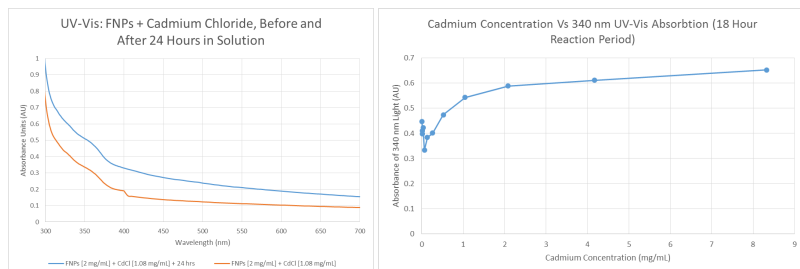


## Key Results

- Peptoid synthesized and purified for functionalization trials
- NPs functionalized with peptoid.
- FNPs shown to exhibit time and concentration dependent up-shift in UV-Vis spectra upon contamination with cadmium.

## Conclusions

- The change in FNPs' spectra may be used to determine an unknown concentration of cadmium
- This will allow sensing methods to be devised that do not rely on the use of expensive technical equipment, allowing previously unable communities to gain access to simple water testing.



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