

# CEDT SUMMER SEMINAR SERIES:

## Lab-in-a-tube System Integrating Hierarchically Wrinkled Electrodes and DNAzyme-functionalized Beads for Diagnosis of *Clostridioides difficile* Infection.

**Thursday, July 9th, 2026**

11:00 P.M. - 12:00 P.M.

In-Person: BSB B156

Rapid diagnosis of bacterial infections remains a critical clinical challenge, as most existing methods require time-consuming enrichment steps. Our work leverages RNA-cleaving DNAzymes, molecular tools programmable to detect specific pathogens, paired with anti-fouling magnetic beads to generate signals in complex biological samples. These signals are then captured by a compact lab-in-a-tube electrochemical biosensor incorporating hierarchically structured sensing electrodes. Together, this integrated platform enables enrichment-free diagnosis of *Clostridioides difficile* infection in clinical stool samples with high concordance with gold-standard PCR.



Biomedical Engineering

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A PhD candidate in the School of Biomedical Engineering, specializing in the development of electrochemical biosensors that integrate functional nucleic acids and anti-fouling materials for enhanced sensing in complex biological media.



Refreshments Provided