

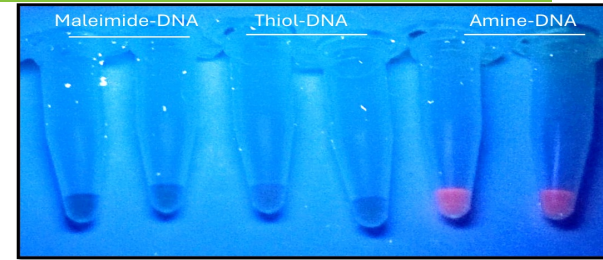
Sensing of Environmental Pollutants Using Luminescent DNA-based Scaffolds in Hydrogels

AIM

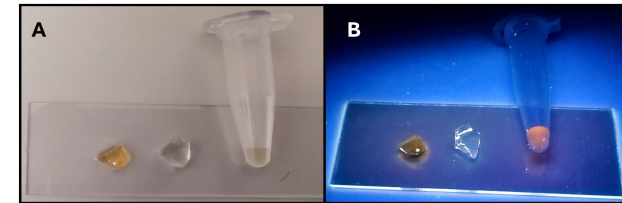
1. Design and development of DNA/AgNCs supramolecular assemblies for sensing.
2. Synthesis of hydrogels with functional groups for immobilization of DNA/AgNCs.
3. Initiate a discussion about the development of a modular platform for environmental sensing.

RESULTS/ACHIEVEMENTS/PLANNED FOLLOW-UP ACTIVITIES

1. A new collaboration was initiated to exchange knowledge and develop a joint research agenda for using fluorescent DNA/AgNCs for sensing applications.
2. Experimental activities confirmed the compatibility of luminescent DNA/AgNCs with hydrogel chemistry. This has encouraged both groups to work towards the potential joint publication of the original research.
3. Results have supported the development of the strategy for the design and evaluation of a luminescent DNA/AgNCs-based multiplex sensing platform.
4. Pratik Shah gave a presentation at the host university. Host Dr. Ruchi Gupta will be invited to present her research in a virtual seminar at Roskilde University to explore opportunities for wider collaborations.
5. Both groups have identified the potential opportunities to apply for joint funding from private foundations in Denmark and EU sources.



Result 1: Screening of DNA modifications compatible with AgNCs synthesis for use in immobilization in hydrogel.



Result 2: Immobilization of DNA/AgNCs in hydrogel. A) Visualization of DNA/AgNCs under visible light; B) Visualization of DNA/AgNCs under UV illumination. Amine-modified DNA/AgNCs was fluorescent in solution (in the Eppendorf tube) and retained fluorescence following crosslinking with hydrogel and extensive washing (on the left). The hydrogel itself is not fluorescent.

Pratik Shah

Home Group: « Pratik Shah », « Roskilde University », « DK » - WG1/2

Host Group: « Ruchi Gupta », « University of Birmingham », « UK » - WG 2/3

Period: 25.09.2024 to 29.09.2024