

## **A carbon dots based fluorescence sensing for the determination of Escherichia coli O157:H7**

### **ABSTRACT**

Sensing founded on fluorescence quenching involving carbon dots (CDs) and gold nanoparticles (AuNPs) for the determination of Escherichia coli (E. coli) O157:H7 has been explored. CDs act as the fluorophore, while AuNPs as the quencher. Target oligos have been utilized to establish distance between CDs and AuNPs nanoparticles in close proximity. At excitation/emission wavelength of 340 nm/450 nm, respectively, the net CDs fluorescence quenching increased proportionally with increasing viscosity of the target oligos. A linear correlation was found between the fluorescence quenching of CDs and the logarithm concentration of target oligos in the series of 0.01–200 nM (slope = 675.6, R<sup>2</sup> = 0.992) with the detection limit (LOD) of  $1.03 \pm 3.54$  nM. The proposed method was utilized for verification of selectivity and specificity towards different oligonucleotide sequence and bacteria strain with satisfactory results.

**Keyword:** fliC gene; Quenching; Fluorescence; Real samples; Quantitative