

Lard detection using a tapered optical fiber sensor integrated with gold- graphene quantum dots

ABSTRACT

In this paper, we reported the detection of lard using tapered optical fiber integrated with graphene quantum dot (GQD). Two different sensors were fabricated and tested, one coated with GQD only as sensing element, the other was coated with gold (Au)-GQD to be tested with lard concentration ranging from 20% till 100%. The GQD coated sensor obtained a sensitivity of 0.034/a.u.% at fluorescence emission peak 652 nm. Meanwhile the Au-GQD sensor, obtained higher sensitivity at 0.042/a.u.% with peak fluorescence emission at 680 nm. The proposed sensor shows a great potential of using sensor in detection of lard for future advancement of food technology.

Keyword: Tapered fiber; Fiber sensor; Graphene quantum dots; Lard; Fluorescence