

## Etched fiber Bragg grating sensor for nitrate sensing application

### ABSTRACT

We demonstrate a reliable method to detect the concentration of Nitrate in water using an etched Fiber Bragg Grating (FBG) sensor. The sensor was etched using 48% Hydrofluoric (HF) acid solution to function as a chemical sensor and interact with Nitrates. The Bragg wavelength ( $\lambda_b$ ) shifted due to the changes of Nitrate concentration. The sensitivity achieved by this sensor is  $2.4 \times 10^{-3}$  nm/ppm. The overall shift of the Bragg wavelength is 0.12 nm from 0 - 50 ppm.

**Keyword:** Nitrate ions; Fiber Bragg grating sensor