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Thinned fibre Bragg grating as a fuel adulteration sensor: simulation and experimental study

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Abstract:

This paper presents the implementation of a thinned fibre Bragg grating as a fuel adulteration sensor for volatile organic compounds. The proposed sensor can detect upto 10% adulteration of benzene, toluene and xylene: hydrocarbons precisely, whereas traditional methods can detect only upto 20% adulteration. The results obtained from the experiments are verified using Finite Difference Time Domain method. It is found that experimental results have very less deviation from simulation results. The proposed sensor provides us with the new possibility that may have commercial application, as well.