

Poster

A simple method for detection of phosgene based on the infiltration of a colorimetric probe in nanostructure TiO₂ films.



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Keywords: Phosgene, chemical reaction, gas detector, solid sensor, optical sensor

ABSTRACT

A new sensor for detection of phosgene has been developed by incorporating an indicator to nanocrystalline TiO₂ thin films.

Nanocrystalline films were used to detect phosgene by measuring the variation of their absorbance spectra. In presence of phosgene, a new band at ~450 nm appears in the spectrum. The response intensity (absorbance at 450 nm) has been found to be concentration-dependent.

Currently we are working in the detection limits and others parameters of his sensor.

Motivation: The motivation in this work is because it had been a very lethal gas in World War II and is currently being used in numerous production processes as frequent as the manufacture of pesticides, dyes or herbicides. It is for this reason that an early detection is required since the lethality of said gas is very high.

Methods: The method used is screen printing. In this method a reagent has been deposited in a nanocrystalline film which is then impregnated with the reagent solution and subsequently exposed to the analyte.

Results: The results obtained are very satisfactory. The tolerance limit for humans is very significantly lowered.

Conclusions: To the best of our knowledge, the sensor described, is one of the best optical and solid sensors in phosgene's detection, reaching concentrations below the parts per million

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