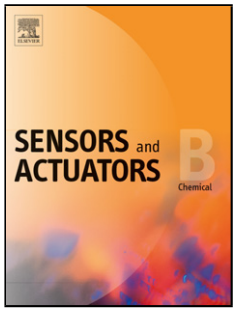

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Colorimetric paper-based device for gaseous hydrogen cyanide quantification based on absorbance measurements

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Highlights:

- An optimized analytical method for gaseous HCN detection is presented
- Colorimetric reaction is performed on a microfluidic paper-based analytical device
- The reagents are easy to prepare and the reaction occurs in aqueous medium
- Absorbance measurements were directly employed to acquire analytical signal
- The point-of-care device is suitable for gaseous HCN and aqueous cyanide determination in several samples

ABSTRACT

Hydrogen cyanide is a highly toxic compound employed for applications such as electroplating, production of organic solvents, fish stunning, and even as a chemical weapon. In this work, we describe a new microfluidic paper-based assay for selective cyanide determination, based on the reaction of the cyanide anion with palladium dimethylglyoximate (DMG) followed by colorimetric reaction of DMG with nickel. Quantification was performed by measuring the absorbance of light passing through the paper,