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# Selective colorimetric detection of dissolved ammonia in water via modified Berthelot's reaction on porous paper

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## Highlights

- New ammonia determination method for water samples using the separation of ammonia gas followed by the Berthelot's reaction
- Involvement of water-assisted mechanism in the selective indophenol formation reaction between a solid sensing layer and gaseous ammonia
- Fabrication of solid-state colorimetric ammonia sensors on a paper substrate

## Abstract

Continuous monitoring and rapid on-site determination of toxic ammonia in various aqueous systems are important for maintaining water quality and preserving the environment. Though several methods such as flow-based spectrophotometry are currently utilized for this purpose, there is still need for more selective ammonia determination. We present a new detection route for quantifying NH<sub>3</sub> in water samples by means of the evaporation of dissolved ammonia into headspace, followed by selective

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