**A gas-diffusion flow injection method coupled with on line solid–liquid extraction for the determination of ammonium in solid samples**

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Abstract

A simple, rapid and reliable gas-diffusion flow injection (GD-FI) method for ammonium determination in building materials has been developed. It is based on leaching ammonium from a ground solid sample into an alkaline solution with subsequent ammonia gas generation. Ammonia is then transported in a nitrogen stream to the GD cell of the FI system where it is absorbed into its acceptor solution containing a mixture of the acid-base indicators cresol red and thymol blue. The maximum increase in the absorbance of the acceptor solution at 580 nm is related to the ammonium concentration in the solid sample. The proposed method is characterized by a linear concentration range of 0.1-5.0 mg NH4(+) kg(-1), a limit of detection of 8 μg NH4(+) kg(-1) and a sample throughput of 10h(-1). A successful application of this method for the determination of ammonium in building materials such as concrete, cement and sand is reported.

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