

# Determination of cobalt in water samples by photoacoustic spectroscopy with a solid-phase spectrophotometry approach using 3-(2-pyridyl)-5,6-bis(4-sulfophenyl)-1,2,4-triazine

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This work forms part of an investigation which seeks to determine metal complexes in a solid phase by photoacoustic spectrometry (PAS). Results of spectral determination of Co(II) complexes are introduced. The method is based on Co(II) colorimetric reaction with 3-(2-pyridyl)-5,6-bis(4-sulfophenyl)-1,2,4-triazine (FST, ferrozine) retained on an anion-exchange resin, DEAE Sephadex A-25. The immobilization of Co(II) on the solid phase is combined with PAS measurement. A numerical approach is applied to reduce noise in the spectral data. At  $\lambda=477\text{nm}$ , the calibration for Co(II) is linear over the range  $14\text{-}300\ \mu\text{gL}^{-1}$ . The Co(II) concentration in water samples was determined by conventional photoacoustic measurement. The relative standard deviation (R.S.D.) of the method for the calibration is  $<5\%$ . Under optimized conditions, the obtained analytical features were LOD  $14\ \mu\text{gL}^{-1}$  and LOQ  $45\ \mu\text{gL}^{-1}$ . © 2011 Elsevier B.V.