

On-line speciation and determination of Cr(III) and Cr(VI) in drinking and waste water samples by reversed-phase high performance liquid chromatography coupled with atomic absorption spectrometry

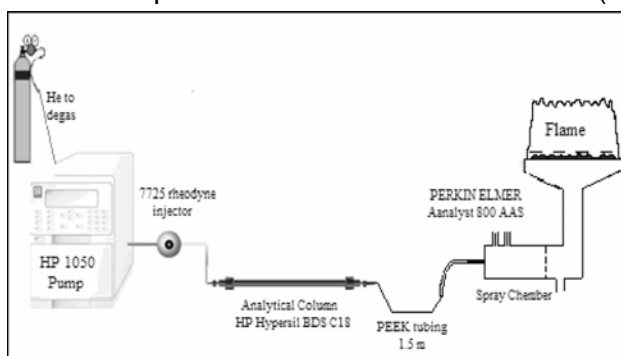
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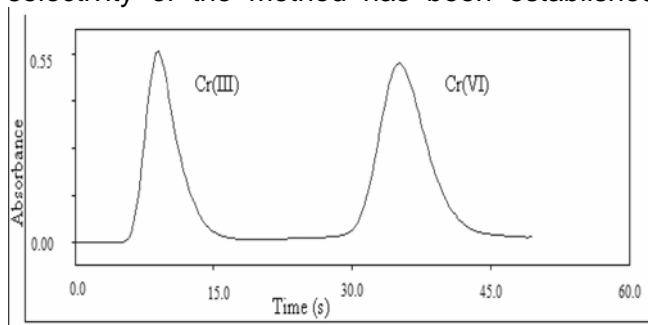
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A simple, rapid, and selective on-line method for the speciation and determination of Cr(III) and Cr(VI) in aqueous solutions by ion-pairing HPLC coupled with flame atomic absorption spectrometry (FAAS) is described.

The composition of the mobile phase has been optimized for better separation. The effects of column temperature, volume of injection loop, fuel flow rate of FAAS, and nebulizer suction rate of FAAS have also been investigated.



Separation is accomplished in almost 2.5 min on a 25 cm length C₁₈ column at 40°C. The selectivity of the method has been established by investigating the effect of interfering elements on chromium determination.



The detection limit (3σ) achieved by the method was calculated as 3.7 ng/mL for Cr(III) and 2.0 ng/mL for Cr(VI). The proposed method has been validated by analyzing certified reference material (BCR 544) and successfully applied to the analysis of drinking water and wastewater samples with a relative error below 6%.

Keywords: AAS / Chromiumspeciation / Combined techniques / HPLC / Water analysis / HPLC-FAAS

Selected References

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