

# New fully portable instrument for the versatile determination of cations and anions by capillary electrophoresis with contactless conductivity detection

Kuban P., Nguyen H.T.A., Macka M., Haddad P.R., Hauser P.C.

Department of Chemistry, University of Basel, Spitalstrasse 51, 4004 Basel, Switzerland; Institute of Analytical Chemistry, Academy of Sciences of the Czech Republic, Veveří 97, 61142 Brno, Czech Republic; Centre for Environmental Technology and Sustainable Development (CETASD), Hanoi University of Science, Nguyen Trai Street 334, Hanoi, Viet Nam; School of Chemistry, Faculty of Science, Engineering and Technology, University of Tasmania, 7001 Hobart, Tasmania, Australia; Department of Chemical Sciences, Dublin City University, Glasnevin, Dublin 9, Ireland

**Abstract:** A new portable capillary electrophoresis instrument with capacitively coupled contactless conductivity detection was developed and optimized for the sensitive field measurements of ionic compounds in environmental samples. It is powered by batteries and the high voltage modules are capable of delivering up to 15 kV at either polarity for more than one working day. Inorganic cations and anions, including ions of heavy metals and arsenate, could be determined with detection limits in the range from about 0.2 to 1  $\mu\text{M}$ . The instrument was field tested in a remote region of Tasmania and nitrite and ammonium could be determined on-site at concentrations as low as 10 ppb in presence of other common inorganic ions at concentrations which were 2 to 3 orders of magnitude higher. © 2007 Wiley-VCH Verlag GmbH & Co. KGaA.

**Author Keywords:** Arsenic; Capillary electrophoresis; Contactless conductivity detection; Environmental analyses; Heavy metals; Inorganic ions; Portable instrument

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Correspondence Address: Kubáň, P.; Department of Chemistry, University of Basel, Spitalstrasse 51, 4004 Basel, Switzerland

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## Authors with affiliations:

- Kubáň, P., Department of Chemistry, University of Basel, Spitalstrasse 51, 4004 Basel, Switzerland, Institute of Analytical Chemistry, Academy of Sciences of the Czech Republic, Veveří 97, 61142 Brno, Czech Republic
- Nguyen, H.T.A., Department of Chemistry, University of Basel, Spitalstrasse 51, 4004 Basel, Switzerland, Centre for Environmental Technology and Sustainable Development (CETASD), Hanoi University of Science, Nguyen Trai Street 334, Hanoi, Viet Nam
- Macka, M., School of Chemistry, Faculty of Science, Engineering and Technology, University of Tasmania, 7001 Hobart, Tasmania, Australia, Department of Chemical Sciences, Dublin City University, Glasnevin, Dublin 9, Ireland
- Haddad, P.R., School of Chemistry, Faculty of Science, Engineering and Technology, University of Tasmania, 7001 Hobart, Tasmania, Australia
- Hauser, P.C., Department of Chemistry, University of Basel, Spitalstrasse 51, 4004 Basel, Switzerland

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