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## Biography

**Johan Bobacka**, D.Sc. (Tech.), is Professor of Analytical Chemistry and the Laboratory of Molecular Science and Engineering, Åbo Akademi University. Johan Bobacka's main research activities are in the area of electroanalytical chemistry and electrochemical sensors with special emphasis on the development of solid-contact ion-selective electrodes, solid-state reference electrodes and novel transduction principles for ion sensors. Research activities are also directed towards wearable chemical sensors and Johan Bobacka is a co-founder and senior scientific advisor of the company *GlucModicum Ltd* developing a platform for needle-free health monitoring. Johan Bobacka is an editor of *Sensors & Actuators: B. Chemical (Elsevier)* and a member of the editorial advisory board of *Electrochimica Acta (Elsevier)*. He is also a member of the editorial boards of *Chemosensors (MDPI)* and *Current topics in electrochemistry (Research Trends)*. Johan Bobacka is the chairman of the board of the profiling area *Technologies for a sustainable future* and chairman of the board of the *Johan Gadolin Process Chemistry Centre (PCC)* at Åbo Akademi University.

## Publications

### **Environmental footprint of voltammetric sensors based on screen-printed electrodes: An assessment towards "green" sensor manufacturing**

Ahamed, A., Ge, L., Zhao, K., Veksha, A., Bobacka, J. & Lisak, G., Sep 2021, In: *Chemosphere*. 278, 130462.

### **In situ catalytic reforming of plastic pyrolysis vapors using MSW incineration ashes**

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### **Highly sensitive and stable fructose self-powered biosensor based on a self-charging biosupercapacitor**

Bollella, P., Boeva, Z., Latonen, R.-M., Kano, K., Gorton, L. & Bobacka, J., 2021, In: *Biosensors and Bioelectronics*. 176

### **Multilayer and Surface Immobilization of EDOT-Decorated Nanocapsules**

Hambly, B., Sears, C., Guzinski, M., Perez, F., Latonen, R.-M., Bobacka, J., Pendley, B. & Lindner, E., 29 Dec 2020, In: *Langmuir*. 37, 1, p. 499-508 1.

### **Potentiometric Carboxylate Sensors Based on Carbazole-Derived Acyclic and Macrocyclic Ionophores**

Yrjänä, V., Saar, I., Ilisson, M., Kadam, S. A., Leito, I. & Bobacka, J., 24 Dec 2020, In: *Chemosensors*. 9, 1, 26 p., 4.

### **Coulometric response of solid-contact anion-sensitive electrodes**

Han, T., Mattinen, U., Mousavi, Z. & Bobacka, J., 27 Nov 2020, In: *Electrochimica Acta*. 367, 137566.

### **Solid reference electrode integrated with paper-based microfluidics for potentiometric ion sensing**

Ding, R., Fiedoruk-Pogrebniak, M., Pokrzywnicka, M., Koncki, R., Bobacka, J. & Lisak, G., 15 Nov 2020, In: *Sensors and Actuators B: Chemical*. 323, 10 p., 128680.

### **Polyterthiophenes Cross-Linked with Terpyridyl Metal Complexes for Molecular Architecture of Optically and Electrochemically Tunable Materials**

Wagner, M., Wagner, K., Barnsley, J. E., Veksha, A., Wagner, P., Gordon, K. C., Bobacka, J., Wallace, G. G., Ivaska, A., Officer, D. L. & Lisak, G., 2 Nov 2020, In: *ChemElectroChem*. 7, 21, p. 4453-4459

### **LogP determination for highly lipophilic hydrogen-bonding anion receptor molecules**

Tshepelevitsh, S., Kadam, S., Darnell, A., Bobacka, J., Rützel, A., Haljasorg, T. & Leito, I., 2 Oct 2020, In: *Analytica Chimica Acta*. 1132, p. 123-133

**On-line microcolumn-based dynamic leaching method for investigation of lead bioaccessibility in shooting range soils**  
Joon, N., Ek, P., Zevenhoven, M., Hupa, L., Miró, M., Bobacka, J. & Lisak, G., Oct 2020, In: Chemosphere. 256, p. – 9 p., 127022.

**Too small to matter? Physicochemical transformation and toxicity of engineered nTiO<sub>2</sub>, nSiO<sub>2</sub>, nZnO, carbon nanotubes, and nAg**

Ahamed, A., Liang, L., Lee, M. Y., Bobacka, J. & Lisak, G., 28 Sep 2020, In: Journal of Hazardous Materials. 404, 21 p., 124107.

**Life cycle assessment of plastic grocery bags and their alternatives in cities with confined waste management structure: A Singapore case study**

Ahamed, A., Vallam, P., Iyer, N. S., Veksha, A., Bobacka, J. & Lisak, G., 29 Aug 2020, In: Journal of Cleaner Production. 278, 11 p., 123956.

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**Coulometric response characteristics of solid contact ion-selective electrodes for divalent cations**

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**Electrochemical sensors for real-world applications**

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**Real-time monitoring of the dissolution of silver nanoparticles by using a solid-contact Ag<sup>+</sup>-selective electrode**

Yin, T., Han, T., Li, C., Qin, W. & Bobacka, J., 8 Mar 2020, In: Analytica Chimica Acta. 1101, p. 50-57

**Silver(I)-selective electrodes based on rare earth element double-decker porphyrins**

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**Bioimpedance Sensor Array for Long-Term Monitoring of Wound Healing from Beneath the Primary Dressings and Controlled Formation of H<sub>2</sub>O<sub>2</sub> Using Low-Intensity Direct Current**

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Leito, I., Teearu, A., Bobacka, J., Randon, J. & Bergquist, J., 2019, In: Analytical and Bioanalytical Chemistry. 411, p. 5913–5921 9 p.

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**Gadolinium retention in gliomas and adjacent normal brain tissue: association with tumor contrast enhancement and linear/macrocyclic agents**

Kiviniemi, A., Gardberg, M., Ek, P., Frantzén, J., Bobacka, J. & Minn, H., 2019, In: Neuroradiology. 61, 5, p. 535–544 10 p.

**Improving the Sensitivity of Solid-Contact Ion-Selective Electrodes by Using Coulometric Signal Transduction**

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**Molecularly imprinted conducting polymer for determination of a condensed lignin marker**

Gonzalez-Vogel, A., Fogde, A., Crestini, C., Sandberg, T., Huynh, T. P. & Bobacka, J., 2019, In: Sensors and Actuators B: Chemical. 295, p. 186–193 8 p.

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**Controlled time release and leaching of silver nanoparticles using a thin immobilizing layer of aluminum oxide**

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**A novel modified terpyridine derivative as a model molecule to study kinetic-based optical spectroscopic ion determination methods**

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**Biomimetic membranes based on molecularly imprinted conducting polymers as a sensing element for determination of taurine**

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**Hand-held transistor based electrical and multiplexed chemical sensing system**

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**Influence of electrode geometry on the response of solid-contact ion-selective electrodes when utilizing a new coulometric signal readout method**

Han, T., Vanamo, U. & Bobacka, J., 2016, In: ChemElectroChem. 3, 12, p. 2071–2077

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**Ion-selective electrodes with 3D nanostructured conducting polymer solid contact**

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**New signal readout principle for solid-contact ion-selective electrodes**

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**Paper-based potentiometric ion sensors constructed on ink-jet printed gold electrodes**

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**Specific electrocatalytic oxidation of cellulose at carbon electrodes modified by gold nanoparticles**

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**Novel ion-to-electron transduction principle for solid-contact ISEs**

Hupa, E., Vanamo, U. & Bobacka, J., 2015, In: Electroanalysis. 27, 3, p. 591–594

**Paper-based microfluidic sampling for potentiometric determination of ions**

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**Solid-contact lead(II) ion-selective electrodes for potentiometric determination of lead(II) in presence of high concentrations of Na(I), Cu(II), Cd(II), Zn(II), Ca(II) and Mg(II)**

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**Textile-based sampling for potentiometric determination of ions**

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Sugano, Y., Latonen, R-M., Akieh-Pirkanniemi, M., Bobacka, J. & Ivaska, A., 2014, In: ChemSusChem. 7, 8, p. 2240–2247

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**Potentiometric sensing utilizing paper-based microfluidic sampling**

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**Determination of Lead(II) in Groundwater Using Solid-State Lead(II) Selective Electrodes by Tuned Galvanostatic Polarization**

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**Electrochemical study of novel nanostructured In<sub>2</sub>S<sub>3</sub> and its effect on oxidative damage to DNA purine bases**

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**Electrochemical synthesis and characterization of poly(3,4-ethylenedioxythiophene) doped with sulfonated calixarenes and sulfonated calixarene-fullerene complexes**

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**Investigation of protein binding with all solid-state ion-selective electrodes**

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**Ion exchange behavior of polypyrrole doped with large anions in electrolytes containing mono- and divalent metal ions**

Latonen, R-M., Akieh-Pirkanniemi, M., Vavra, K., Bobacka, J. & Ivaska, A., 2013, In: *Electroanalysis*. 25, 4, p. 991–1004 14 p.

**Solid-contact ion-selective electrodes with highly selective thioamide derivatives of p-tert-butylcalix[4]arene for the determination of lead(II) in environmental samples**

Guziński, M., Lisak, G., Sokalski, T., Bobacka, J., Ivaska, A., Bocheńska, M. & Lewenstam, A., 2013, In: *Analytical Chemistry*. 85, 3, p. 1555–1561 7 p.

**Direct electron transfer of *Trametes hirsuta* laccase in a dual-layer-architecture of poly(3,4-ethylenedioxythiophene) films**

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**Disposable solid-contact ion-selective electrodes for environmental monitoring of lead with ppb limit-of-detection**

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**Electrochemical Sensors: From nanoscale engineering to industrial applications. Selection of papers from the 9th ISE Spring Meeting 8-11 May 2011, Turku, Finland: Foreword**

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**Impedance study of thiolated polyaniline**

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**Poly(3,4-ethylenedioxythiophene) based enzyme-electrode configuration for enhanced direct electron transfer type biocatalysis of oxygen reduction**

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**Recovery of nanomolar detection limit of solid-contact lead (II)-selective electrodes by electrode conditioning**

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**Reduced Graphene Oxide Films as Solid Transducers in Potentiometric All-Solid-State Ion-Selective Electrodes**

Hernández, R., Riu, J., Bobacka, J., Vallés, C., Jiménez, P., Benito, A. M., Maser, W. K. & Xavier Rius, F., 2012, In: *Journal of Physical Chemistry C*. 116, 42, p. 22570–22578 9 p.

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**Direct Electron Transfer of *Trametes hirsuta* Laccase in a Dual-Layer Architecture of Poly(3,4-ethylenedioxythiophene) Films**

Wang, X., Latonen, R-M., Sjöberg-Eerola, P., Eriksson, J-E., Bobacka, J., Boer, H. & Bergelin, M., 2011, In: Journal of Physical Chemistry C. 115, 13, p. 5919–5929

**Electrochemically controlled ion transport across polypyrrole/multi-walled carbon nanotube composite membranes**

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**Electrodeposition of PEDOT-Cl film on a fully printed Ag/polyaniline electrode**

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**Immobilization of *Trametes hirsuta* laccase into poly(3,4-ethylenedioxythiophene) and polyaniline polymer-matrices**

Wang, X., Sjöberg-Eerola, P., Immonen, K., Bobacka, J. & Bergelin, M., 2011, In: Journal of Power Sources. 196, 11, p. 4957–4964

**Impedance study of the ion-to-electron transduction process for carbon cloth as solid-contact material in potentiometric ion sensors**

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**Ionic Liquid-Based, Liquid-Junction-Free Reference Electrode**

Cicmil, D., Anastasova, S., Kavanagh, A., Diamond, D., Mattinen, U., Bobacka, J., Lewenstam, A. & Radu, A., 2011, In: Electroanalysis. 23, 8, p. 1881–1890 10 p.

**Simultaneous monitoring of the transport of anions and cations across polypyrrole based composite membranes**

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**Tuned galvanostatic polarization of solid-state lead-selective electrodes for lowering of the detection limit**

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**A study on lowering the detection limit with solid-state lead-selective electrodes**

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**Development of miniature all-solid-state potentiometric sensing system**

Anastasova-Ivanova, S., Mattinen, U., Radu, A., Bobacka, J., Lewenstam, A., Migdalski, J., Danielewski, M. & Diamond, D., 2010, In: Sensors and Actuators B: Chemical. 146, p. 199–205 7 p.

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