

## Jianhua Wang

Professor, Research Center for Analytical Sciences, College of Sciences, Northeastern University, Shenyang, CHINA.

Born 1962; **Qualifications:** BSc (Chemistry), Nankai University (1985); MSc (Inorganic Chemistry), Jilin University (1988); PhD (Analytical Chemistry), Technical University of Denmark (2002); **Positions:** Assistant Professor, Yantai Normal University (1988-1993); Associate Professor, Yantai Normal University (1993-1994); Professor, Yantai Normal University (1994-1999), Northeastern University (2003-present); Visiting Professor, University of Delaware, USA (1997-1998); Director of Research Center for Analytical Sciences, Northeastern University, CHINA (2003-2012); Dean of College of Sciences, Northeastern University, CHINA (2006-present); Associate Editor for *Talanta* (2004.12-present); Advisory Board Members: *Journal of Analytical Atomic Spectrometry* (RSC, 2007-2010), *Chinese Journal of Analytical Chemistry* (2006-present), *Spectroscopy and Spectral Analysis* (2008-present), *Journal of Analytical Science* (2008-present), *Chinese Journal of Analysis Laboratory* (2004-present).



### Advanced Flow Analysis Methodology for Sample Processing and Ultra-trace Analysis

During the last decades, the main objective of my scientific efforts mainly includes separation and preconcentration of ultra-trace metal species and biomacromolecules from complex sample matrixes by the hyphenation of flow based sample processing platforms with various detection techniques. Therefore, my research interests have been focusing on the development of sample pretreatment approaches in flow systems for the selective isolation of the analytes of biological and environmental significance. Various flow-based procedures for the separation and preconcentration followed by determination of heavy metals and biomacromolecules have been developed in this respect.

In the main time, it has been my general interest in the miniaturization of flow-based analytical systems or instrumentations. I have exploited the lab-on-valve (LOV) systems incorporating renewable mini-column for on-line separation and preconcentration of metals and biomacromolecules. In addition, a series of LOV-based miniaturized atomic spectrometric systems have been developed in my laboratory, including atomic fluorescence and atomic emission spectrometry, with a nonthermal micro-plasma, e.g., dielectric barrier discharge (DBD), as atomizer and/or irradiation source. These miniaturized atomic spectrometric systems have been demonstrated to exhibit comparable analytical performances with respect to those achieved by commercially available bulky instrumentations.

Based on the researches of my group, a series of sequential injection analyzers for specific target analytes in environmental monitoring have been commercialized in China.

### Selected publications on the above exploitations:

1. Yu Y.L., Du Z., Chen M.L., Wang J.H. Atmospheric pressure dielectric barrier discharge as radiation source for optical emission spectrometry. *Angew. Chem. Int. Edit.*, 2008, 47, 7909-7912.

2. Chen X.W., Zou A.M., Chen M.L., Wang J.H., Dasgupta P.K. Live HeLa cells preconcentrate and differentiate inorganic arsenic species. *Anal. Chem.*, 2009, 81, 1291-1296.
3. Wang J.H., Cheng D.H., Chen X.W., Du Z., Fang Z.L. Direct extraction of double stranded DNA into ionic liquid BmimPF<sub>6</sub> and its quantification. *Anal. Chem.*, 2007, 79, 620-625.
4. Yang M., Xu Y., Wang J.H. Lab-on-Valve system integrating a chemiluminescent entity and in situ generation of nascent bromine as oxidant for chemiluminescent determination of tetracycline. *Anal. Chem.*, 2006, 78, 5900-5905.
5. Wang Y., Wang J.H., Fang Z.L. Octadecyl immobilized surface for precipitate collection with a renewable microcolumn in a Lab-on-Valve coupled to an electrothermal atomic absorption spectrometer for ultratrace cadmium determination. *Anal. Chem.*, 2005, 77, 5396-5401.
6. Du Z., Yu Y.L., Wang J.H. The extraction of proteins from biological fluids by using an ionic liquid/aqueous dual phase system. *Chem. Eur. J.*, 2007, 13, 2130-2137.
7. Tian Y., Chen M.L., Chen X.W., Wang J.H. et al. Arsenic preconcentration via solid phase extraction and speciation by HPLC-gradient hydride generation atomic absorption spectrometry. *J. Anal. At. Spectrom.*, 2011, 26 (1), 133-140.
8. Chen M.L., Zhao Y.N., Zhang D.W., Tian Y., Wang J.H. The immobilization of hydrophilic ionic liquid for Cr(VI) retention and chromium speciation. *J. Anal. At. Spectrom.*, 2010, 25, 1688-1694.
9. Chen M.L., Tian Y., Wang J.H. Integrating preconcentration, tetrahydroborate immobilization, elution and chemical vapor generation onto a cellulose surface for the determination of cadmium with atomic fluorescence spectrometry. *J. Anal. At. Spectrom.*, 2008, 23, 876-880.
10. Yu Y.L., Du Z., Chen M.L., Wang J.H. A miniature lab-on-valve atomic fluorescence spectrometer integrating a dielectric barrier discharge atomizer demonstrated for arsenic analysis. *J. Anal. At. Spectrom.*, 2008, 23, 493-499.
11. Yu Y.L., Du Z., Wang J.H. The development of a miniature atomic fluorescence spectrometric system in a lab-on-valve for mercury determination. *J. Anal. At. Spectrom.*, 2007, 22, 650-656.
12. Yang T., Chen M.L., Hu X.W., Wang Z.W., Wang J.H., Dasgupta P.K. Thiolated Eggshell Membranes Sorb and Speciate Inorganic Selenium. *Analyst*, 2011, 136 (1), 83-89.
13. Wan Z., Xu Z.R., Wang J.H. Flow injection on line solid phase extraction for ultratrace lead screening with hydride generation atomic fluorescence spectrometry. *Analyst*, 2006, 131, 141-147.
14. Chen X.W., Wang W.X., Wang J.H. A DNA assay protocol in a lab-on-valve meso-fluidic system with detection by laser-induced fluorescence. *Analyst*, 2005, 130, 1240-1244.