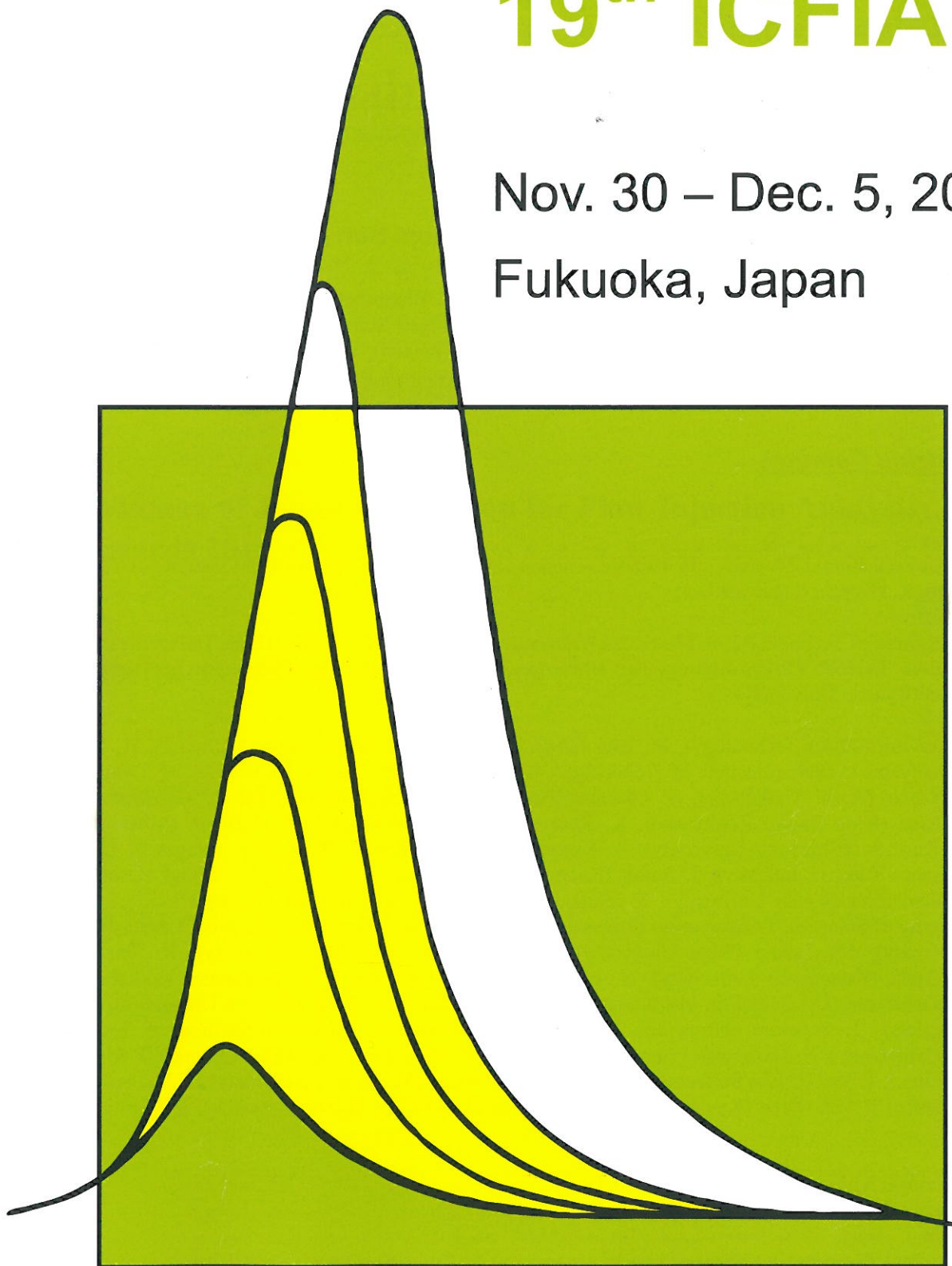


Program &
Book of Abstracts

19th ICFIA

Nov. 30 – Dec. 5, 2014

Fukuoka, Japan



The 19th International Conference on Flow Injection Analysis (19th ICFIA)

**Development of a solid-liquid extraction chamber for flow systems.
Application to the analysis of coffee acidity**

Andrea C. Galvis-Sánchez, João Rodrigo Santos, António O.S.S. Rangel*

*CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de
Biotecnologia, Universidade Católica Portuguesa/Porto, Porto, Portugal*

E-mail: arangel@porto.ucp.pt

The majority of the flow manifolds are prepared to manage exclusively aqueous samples; then, analysis of solid samples usually requires the off-line preparation of an aqueous extract. In this context, a challenging task is to perform solid sample treatment using the flow system. The main advantage of such approach is to reduce some off-line procedures associated to the solid sample handling, namely obtaining the liquid sample extract, further filtration and inherent glassware routine operations. Some in-line approaches able to perform solid-liquid extraction were described [1-3], but they presented difficulties in terms of solid samples replacement and in the enrichment of the liquid sample extract. To the best of our knowledge, an approach covering both referred features has not been highlighted conveniently in the literature.

In this work, an analytical approach able to perform automatically solid-liquid extraction in a flow system is presented. A strategy enabling efficient in-line solid-liquid extraction with fast sample replacing was aimed. In this way, a solid-liquid extraction chamber was designed and constructed to be coupled into the flow system. The flow system was used for the determination of acidity in roasted grounded coffee samples. The case study selected is an important organoleptic characteristic of the coffee. Titratable acidity, which can be directly correlated with the consumer perceived acidity [4], may increase up to 4 fold of the initial value, during coffee roasting [5] and therefore this parameter is of great interest to coffee roasters.

References:

- [1] W Tiyapongpattana, P Pongsakul, J Shiowatana, D Nacapricha, *Talanta* 62 (2004) 765.
- [2] R. Chomchoei, E. H. Hansen, J. Shiowatana, *Anal. Chim. Acta* 526 (2004) 177.
- [3] P.S. Fedotov, W.J. Fitz, R. Wennrich, P. Morgenstern, W.W. Wenzel, *Anal. Chim. Acta* 538 (2005) 93
- [4] M. Sivetz, *Food Technol* 5 (1972) 70–77
- [5] T. Fuse, F. Kusu, K. Takamura, *J. Agric. Food Chem.* 45 (1997) 2124

Acknowledgements: AC Galvis-Sanchez and JR Santos acknowledge FCT, Portugal and FSE for the financial support through the POPH-QREN program via the grants SFRH/ BPD/ 37890/ 2007 and SFRH/ BPD/ 63492/ 2009. This work was supported by National Funds from FCT – Fundação para a Ciência e a Tecnologia through project PEst-OE/EQB/LA0016/2013.