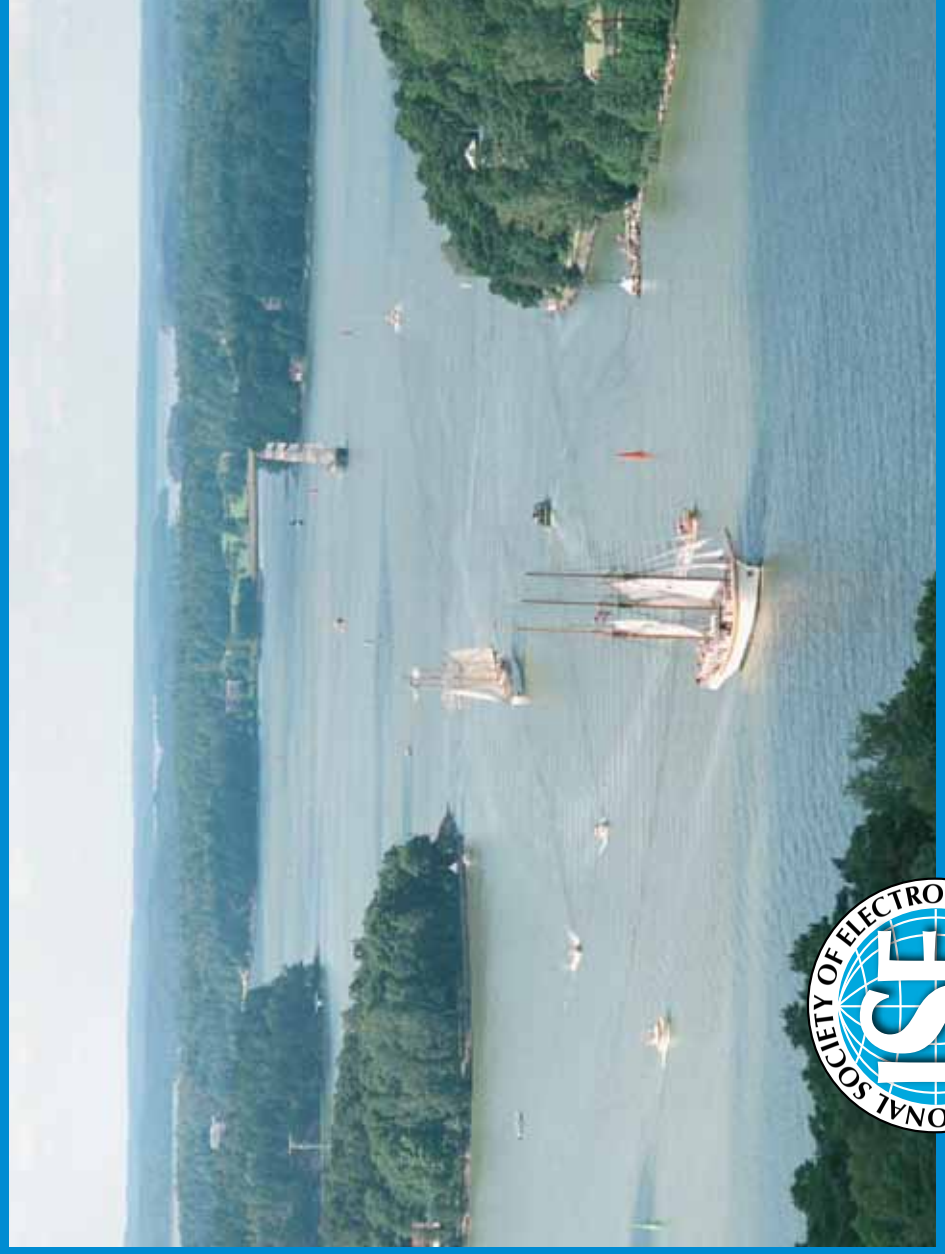
The 9th Spring Meeting

of the International Society of Electrochemistry

Electrochemical Sensors:
From nanoscale engineering
to industrial applications

May 8 to 11, 2011 Turku, Finland



Book of Abstracts

Conference Schedule

Sunday, 8 May		Monday, 9 May		Tuesday, 10 May		Wednesday, 11 May	
		09:00-09:40	**Keynote Address**	09:00-09:40	**Keynote Address**	09:00-09:40	**Keynote Address**
		09:50-10:20	**Oral Presentations**	09:50-10:20	**Oral Presentations**	09:50-10:20	**Oral Presentations**
		10:20-10:40	Coffee Break	10:20-10:40	Coffee Break	10:20-10:40	Coffee Break
		10:40-12:20	**Oral Presentations**	10:40-12:20	**Oral Presentations**	10:40-12:20	**Oral Presentations**
		12:20-13:50	Lunch	12:20-13:50	Lunch	12:20-13:50	Lunch
14:00	**Registration opens**	13:50-14:30	**Keynote Address**	13:50-15:20	**Oral Presentations**	13:50-15:30	**Oral Presentations**
		14:40-16:10	**Oral Presentations**				
		16:10-16:30	Coffee Break			15:30-15:50	Coffee Break
		16:30-17:30	**Oral Presentations**	15:20-17:40	**Poster Session II**	15:50-16:00	**Closing**
17:15-17:45	**Opening**	17:30-19:30	**Poster Session I**				
18:00-19:20	**IYC 2011 session**						
20:00-21:30	**Reception**			19:00-24:00	**Banquet** *Buses leave from the Market Square at 19:00*		

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P-032

A Hybrid Electronic Tongue for Direct Classification of Baby Liquid Foods With or Without Gluten

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People suffering from celiac disease are gluten intolerant and inadvertent ingestion of gluten proteins must be avoided. Several techniques have been proposed to detect/quantify gluten proteins in foodstuffs: immunochemical methods, mass tandem spectrometry and polymerase chain reaction as well as gluten sensors [1]. Recently, a potentiometric electronic tongue (ET) with lipo/polymeric membranes has been used to detect gliadins, which are gluten proteins, in foodstuffs [2]. However, the use of these techniques requires the previous extraction of gluten proteins. This step can be a possible drawback since it is not possible to guarantee that the extraction has a 100% yield since the protein types overlap in solubility and extractability [3]. In this work, the feasibility of a hybrid multi-sensor ET, which combines repeated cross-sensitivity and ion selective sensors (Fig. 1), to discriminate gluten-free and gluten-containing liquid baby foods has been evaluated. The device was constructed using a screen-printed technique and directly applied in the liquid infant food samples. No extraction or dilution/dissolution step was required. In total, 5 "gluten-free" and 10 "gluten-containing" liquid baby foods of different flavors were purchased at local supermarkets and analyzed. The preliminary results obtained from the principal component analysis (Fig. 2) show that the signals profiles recorded by the hybrid ET possessed valuable information allowing grouping the samples in mainly two groups. In fact, linear discriminant analysis allowed the correct classification of 95% of the samples (leave-one-out cross-validation process) being only one baby liquid food containing gluten misclassified as gluten-free. Although further studies are needed, the satisfactory preliminary results described here presumably demonstrate the ability of the hybrid ET to be used as a rapid and disposable practical tool for quality control of liquid foods for babies suffering from gluten intolerance.

Figure 1

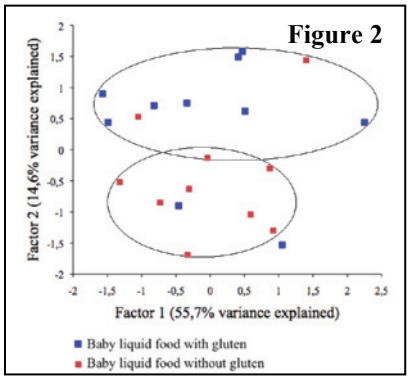

Figure 2

[1] L. De Stefano et al., *J. Proteome Res.* 5 (2006) 1241-1245.
[2] A.M. Peres et al., *Talanta* 83 (2011) 857–864.
[3] F.M. Dupont et al., *J. Agric. Food Chem.* 53 (2005), 1575-1584.