Accepted Manuscript

Magnetoelastic sensors with hybrid films for bacteria detection in milk

Lilian V.R. Beltrami, Mateus Beltrami, Mariana Roesch-Ely, Sandra R. Kunst, Frank P. Missell, Eliena J. Birriel, Célia de F. Malfatti

PII:	S0260-8774(17)30208-X
DOI:	10.1016/j.jfoodeng.2017.05.010
Reference:	JFOE 8881
To appear in:	*Journal of Food Engineering*
Received Date:	08 February 2017
Revised Date:	01 May 2017
Accepted Date:	10 May 2017

Please cite this article as: Lilian V.R. Beltrami, Mateus Beltrami, Mariana Roesch-Ely, Sandra R. Kunst, Frank P. Missell, Eliena J. Birriel, Célia de F. Malfatti, Magnetoelastic sensors with hybrid films for bacteria detection in milk, *Journal of Food Engineering* (2017), doi: 10.1016/j.jfoodeng.2017.05.010

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Magnetoelastic sensors with hybrid films for bacteria detection in milk

Lilian V. R. Beltrami[a*], Mateus Beltrami[b], Mariana Roesch-Ely[c], Sandra R. Kunst[d], Frank P. Missell[b], Eliena J. Birriel[d] and Célia de F. Malfatti[a]

a– Laboratório de Pesquisa em Corrosão (LAPEC), Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brasil.

b – Laboratório de Caracterização Magnética (LCM), Universidade de Caxias do Sul (UCS), Caxias do Sul, RS, Brasil.

c – Laboratório de Geômica, Proteômica e Reparo de DNA, Universidade de Caxias do Sul (UCS), Caxias do Sul, RS, Brasil.

d - Laboratório de Corrosão e Proteção Superficial (LCOR), Universidade de Caxias do Sul (UCS), Caxias do Sul, RS, Brasil.

* Correspondig author: Lilian V. R. Beltrami – e-mail: lvrossa@yahoo.com.br

Abstract: Currently the detection of bacteria in food needs to be quick and accurate to avoid health problems. An alternative to enable the rapid detection of microorganisms in food is the use of magnetoelastic sensors. These sensors allow the detection and quantitation of bacteria via sensor mass variation. In addition to speed and simplicity, the great advantage is remote sensing, without the use of direct physical connections (wireless monitoring). The objective of this research is to develop a sensor for the detection of bacteria in milk using a magnetoelastic alloy (Metglas 2826MB3) coated with a hybrid film based on silicon alkoxide precursors (TEOS and MAP) without the use of antibodies. Resonance frequency variation were measured and the sensor responded to mass variation and allowed the detection of the presence of bacteria (*Escherichia coli* and *Staphylococcus aureus*) in different concentrations, with the sensor remaining intact throughout the test period.

Download English Version:

https://daneshyari.com/en/article/4908795

Download Persian Version:

https://daneshyari.com/article/4908795

Daneshyari.com