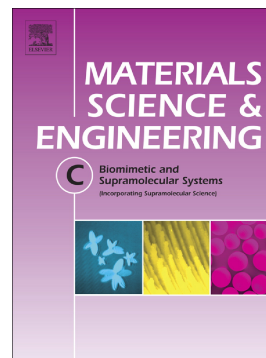


Accepted Manuscript

Lecithin suspensions for electrophoretic deposition on stainless steel coatings

Paulina A. Trzaskowska, Aleksandra Poniatowska, Maciej Trzaskowski, Joanna Latocha, Piotr Ozga, Roman Major, Tomasz Ciach



PII: S0928-4931(17)33702-5
DOI: doi:[10.1016/j.msec.2018.07.052](https://doi.org/10.1016/j.msec.2018.07.052)
Reference: MSC 8764
To appear in: *Materials Science & Engineering C*
Received date: 13 September 2017
Revised date: 6 July 2018
Accepted date: 20 July 2018

Please cite this article as: Paulina A. Trzaskowska, Aleksandra Poniatowska, Maciej Trzaskowski, Joanna Latocha, Piotr Ozga, Roman Major, Tomasz Ciach , Lecithin suspensions for electrophoretic deposition on stainless steel coatings. *Msc* (2018), doi:[10.1016/j.msec.2018.07.052](https://doi.org/10.1016/j.msec.2018.07.052)

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.

Lecithin suspensions for electrophoretic deposition on stainless steel coatings.

Paulina A. Trzaskowska*^{1,2}, Aleksandra Poniatońska¹, Maciej Trzaskowski^{1,2}, Joanna Latocha¹, Piotr Ozga³, Roman Major³, Tomasz Ciach^{1,2}

¹Faculty of Chemical and Process Engineering, Warsaw University of Technology, Waryńskiego 1, 00-645 Warsaw, Poland

²CEZAMAT PW, Poleczki 19, 02-822 Warsaw, Poland

³Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Reymonta 25, 30-059 Kraków, Poland

*corresponding author: Paulina.Trzaskowska.dokt@pw.edu.pl, fax no. 22 825 1440

Abstract

Lecithin is a mixture of phospholipids (PLs) that are found in living organisms. It gained the interest as a bio- and hemocompatible modifying agent for biomaterials. In this paper, we focused on the elaboration of a simple and well-described technology of metals coating with low-cost substance that could be useful in biomaterials industry. We studied the utility of lecithin suspension for stainless steel coating by electrophoretic deposition method. Our goal was to find a relationship between the conditions of lecithin suspension preparation, obtained suspension properties (vesicles size and structure, zeta potential, electrophoretic mobility) and lecithin coating features (topography, roughness). We found that final pH value, zeta potential and electrophoretic mobility of lecithin suspensions were not altered by initial solution pH value. However, the presence of hydrated Na⁺ ions forced forming of large multi-layered vesicles. We obtained uniform lecithin coatings with the use of electrophoretic deposition, which has a great potential to be used in a large scale.

Keywords: soybean lecithin; roughness; electrophoretic deposition; biomaterials; metals coating

1. Introduction

Lecithin is a natural low molecular weight surfactant composed of a mixture of various phospholipids (PLs). PLs found in lecithin can be found in any living organism as they compose a lipid matrix in cellular membranes [1,2]. Amongst all, soybeans are the most efficient lecithin source due to high lecithin content and its outstanding properties. It enhances memory, helps preventing and treating diseases and has positive influence on cardiovascular system [3] thus has been used in food, cosmetics and pharmaceutical industries [4]. Soybean lecithin is composed mainly of

Download English Version:

<https://daneshyari.com/en/article/7865420>

Download Persian Version:

<https://daneshyari.com/article/7865420>

[Daneshyari.com](https://daneshyari.com)