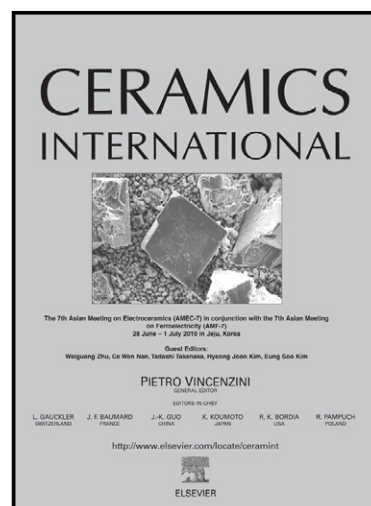


Effect of process parameters on behaviour of zeolite coatings obtained by hydrothermal direct synthesis on aluminium support

L. Calabrese, L. Bonaccorsi, D. Di Pietro, E. Proverbio



[www.elsevier.com/locate/ceramint](http://www.elsevier.com/locate/ceramint)

PII: S0272-8842(14)00693-2  
DOI: <http://dx.doi.org/10.1016/j.ceramint.2014.04.138>  
Reference: CERI8506

To appear in: *Ceramics International*

Received date: 31 January 2014  
Revised date: 18 April 2014  
Accepted date: 27 April 2014

Cite this article as: L. Calabrese, L. Bonaccorsi, D. Di Pietro, E. Proverbio, Effect of process parameters on behaviour of zeolite coatings obtained by hydrothermal direct synthesis on aluminium support, *Ceramics International*, <http://dx.doi.org/10.1016/j.ceramint.2014.04.138>

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 galley proof before it is published in its final citable 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.

**EFFECT OF PROCESS PARAMETERS ON BEHAVIOUR OF ZEOLITE  
COATINGS OBTAINED BY HYDROTHERMAL DIRECT SYNTHESIS ON  
ALUMINIUM SUPPORT**

L. Calabrese\*, L. Bonaccorsi, D. Di Pietro, E. Proverbio

email: lcalabrese@unime.it; lbonaccorsi@unime.it; ddietro@unime.it;

edoardo.proverbio@unime.it

Department of Electronic Engineering, Industrial Chemistry and Engineering

University of Messina, Contrada di Dio (Sant'Agata), 98166 Messina (Italy)

\* Corresponding author:

Tel.: +39 090 3977544, Fax: +39090397464

**ABSTRACT**

This work reports the results of an experiment study on anti-corrosion coatings obtained by direct growth of zeolite Y films on aluminium substrates by an amine-modified hydrothermal synthesis. In particular, the effect of TEA (triethanolamine) presence was evaluated in terms of coating performances by varying synthesis times and drying temperatures. The morphological analysis showed that the films were homogeneous and compact up to 120  $\mu\text{m}$  in thickness. Peel tests confirmed the good adhesive properties of all kinds of investigated coatings. In the end, electrochemical tests, carried out in 3.5% NaCl and in  $\text{Ca}(\text{OH})_2$  saturated solution, showed good barrier properties offered by this type of coating. Low drying temperature allowed to keep TEA entrapped in the zeolite structure so that it greatly influenced corrosion protection behaviour.

Keywords: Aluminium alloy; Coating; zeolite; adhesion; corrosion.

Download English Version:

<https://daneshyari.com/en/article/10625266>

Download Persian Version:

<https://daneshyari.com/article/10625266>

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