

International Conference on Microorganisms-Cementitious Materials Interactions 2016

RILEM Proceedings Pro 102

Delft, The Netherlands
23 June 2016

Editors:

**Virginie Wiktor
Henk Jonkers
Alexandra Bertron**

ISBN: 978-1-5108-3766-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2016) by RILEM Publications SARL
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact RILEM Publications SARL
at the address below.

RILEM Publications SARL
157 rue des Blains
F-92220 Bagneux
France

Phone: +33 1 45 36 10 20
Fax: +33 1 45 36 63 20

dg@rilem.net

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

SESSION 1: DETERIORATION OF CEMENT-BASED MATERIALS BY MICROORGANISMS IN DIFFERENT CONTEXTS

MICROBIAL-INDUCED CONCRETE CORROSION - A WORLDWIDE PROBLEM	1
<i>C. Grengg, M. Kiliswa, F. Mittermayr, M. Alexander</i>	
MICROBIAL-INDUCED CONCRETE DETERIORATION IN SEWER ENVIRONMENT: MECHANISMS AND MICROBIAL POPULATIONS	20
<i>M. Peyre Lavigne, C. Lors, M. Valix, J. Herisson, E. Paul, A. Bertron</i>	
STATE OF THE ART ON MODELING OF BIODEGRADATION OF CONCRETE SEWER IN PRESENCE OF HYDROGEN SULFIDE	37
<i>Thierry Chaussadent, Mathieu Peyre Lavigne, Anaïs Grandclerc</i>	
STORAGE AND TREATMENT OF AGRICULTURAL EFFLUENTS: A REVIEW	48
<i>C. Voegel, A. Bertron, B. Erable, E.D. Van Hullebusch</i>	
MICROBIAL ATTACK ON SUBSEA SPRAYED CONCRETE	63
<i>Sabina Karacic, Per Hagelia, Frank Persson, Britt-Marie Wilén</i>	

SESSION 2: PROLIFERATION OF MICROORGANISMS (ALGAE FUNGI) ON BUILDINGS MATERIALS IN INDOOR AND OUTDOOR CONDITIONS

OVERVIEW OF INDOOR MICROBIAL GROWTH ON BUILDING MATERIALS	76
<i>Thomas Verdier, Alexandra Bertron, Pernilla Johansson</i>	
THE BRIGHT SIDE OF MICROORGANISMS INTERACTING WITH BUILDING MATERIALS	94
<i>S. Manso</i>	

SESSION 3: ENGINEERED BACTERIA-BASED PROTECTIVE SYSTEMS FOR CEMENTITIOUS MATERIALS

UREOLYTIC BACTERIA-BASED SELF-HEALING CONCRETE	103
<i>J. Wang, N. De Belie</i>	
SELF-HEALING OF CRACKS IN CONCRETE VIA BACTERIAL AEROBIC METABOLIC CONVERSION OF ORGANIC COMPOUNDS	115
<i>Henk M. Jonkers, Renée M. Mors, Lupita M.G. Sierra-Beltran, Eirini Tziviloglou, Virginie A.C. Wiktor</i>	
BACTERIAL SELF-HEALING CONCRETE: EFFECT OF ENVIRONMENT EXPOSURE AND CRACK SIZE	132
<i>Kevin Paine</i>	
PRACTICAL APPLICATIONS OF BACTERIA-BASED PROTECTIVE SYSTEMS: SELF-HEALING CONCRETE AND REPAIR SYSTEMS	147
<i>Virginie Wiktor, Henk M. Jonkers</i>	
EVALUATION OF EXPERIMENTAL METHODOLOGY TO ASSESS THE SEALING EFFICIENCY OF BACTERIA-BASED SELFHEALING CONCRETE: ROUND ROBIN TEST	156
<i>Eirini Tziviloglou, Virginie Wiktor, Jianyun Wang, Kevin Paine, Mohamed Alazhari, Alan Richardson, Marielle Gueguen, Nele De Belie, Erik Schlangen, Henk Jonkers</i>	
Author Index	