



Proceedings
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ICBBM 2015

Proceedings of the 1st International Conference
on Bio-based Building Materials

Edited by Sofiane AMZIANE and Mohammed SONEBI

Associate editor: Karine CHARLET

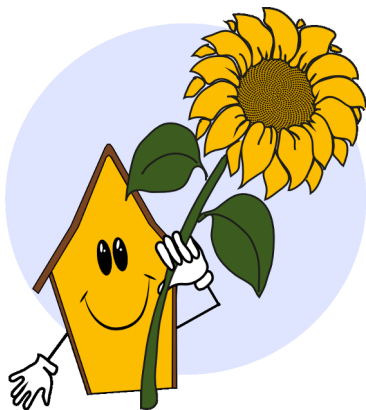
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ICBBM 2015

First International Conference on Bio-based Building Materials

June 22nd - 24th 2015 - Clermont-Ferrand, France

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- prepare state-of-the-art reports to identify further research needs,
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- Report 42:** 'Acoustic Emission and Related Non-destructive Evaluation Techniques for Crack Detection and Damage Evaluation in Concrete' - Final Report of RILEM Technical Committee 212-ACD (e-ISBN: 978-2-35158-100-1); *Ed. M. Ohtsu*



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Plenary speakers

Prof. Laurent Arnaud, ENSAM ParisTech, France, *The use of biomass for sustainable building: fad or scientific interests?*

Prof. Arezki Tagnit-Hamou, Sherbrooke University, Civil Engineering Department, Canada, *Alternative cementitious materials for sustainable concrete production*

Dr Florence Collet, Rennes Univ., Laboratory of civil engineering and mechanical engineering (LGCGM), France and Dr Vincent Picandet, South Brittany Univ., Laboratoire d'ingénierie des matériaux de Bretagne (LIMATB), France, *Characterisation testing of hemp shiv for obtaining initial water content, water absorption, dry density, particle size distribution and thermal conductivity*

Prof. Rafik Belarbi, La Rochelle Univ., Civil Engineering Dpt, France, *Heat and moisture transfer in building material*

Dr Mike Lawrence, BRE Centre for Innovative Construction Materials, Bath Univ., UK, *European funded research into bio-based construction materials. HEMPSEC, ISOBIO and ECO-SEE*



Preface

The ICBBM2015 is an international forum for information dissemination and exchange, discussions and debates on research and practice related to innovative bio-construction materials and technologies with objectives for sustainable development.

“We aim to be this century’s leader in sustainable materials”. Biomaterials are processed or engineered products obtained partially or fully from renewable biobased resources, including: natural fibre composites, bioplastics, biorubbers, biofoams, bioadhesives, bioinks, biobased paints and coatings.

The conference attracted 150 people from several countries representing a wide range of academics, scientists, researchers, students, designers, policy makers and other industrialists from a wide variety of backgrounds, including fields of engineering, materials, sustainable, architecture, and ecological technologies, biomaterials, materials sciences, environmental engineering and government agencies, en-users, etc. Participants have the opportunity to share ideas on the state-of-the-art innovations, state-of-the-practice and future trends of bio-based building materials and sustainable materials used in construction.

The ICBBM2015 proceedings include the lectures and papers presented at ICBBM conference. It consists of a book of full texts of papers: 27 invited papers and 120 technical papers from over 32 countries. The keynotes, the papers and poster papers were presented in four parallel sessions which covered a wide spectrum of the topics related to natural fibres and materials, mechanical performances of bio-based building materials, hygroscopic and hygrothermal properties of biomaterials, acoustic and durability performance of bio-materials, eco-friendly binders with low CO₂-emission and low embodied carbon energy, advances in research methodologies and bio-materials testing, rammed earth, life-cycle assessment of materials and others.

On behalf of the local organizing committee of ICBBM2015, we would like to take this opportunity to express our sincere thanks to all our contributors and participants for their carefully prepared, stimulating and thought provoking manuscripts; to the co-organizers of the one-day pre-course on “Bio-based building materials and use of polysaccharide in building and construction materials” for their dedicated task; to the members of the Technical and Scientific Committee for their time and effort of reviewing the papers and their valuable assistance, without which the conference could not be formed.

The organization of a conference of this scale could not have been possible without the support and contributions of many organizations and individuals, notably without the financial support given by the numerous sponsors. We also value the support of RILEM organization (The International Union of Laboratories and Experts in Construction Materials, Systems and Structures) and American Concrete Institute (ACI).

Thanks go to all those who have devoted their time and effort to the organization of the conference and publication of the proceedings, including secretarial staffs and research students of the ICBBM2015 for their diligent work and commitment to bring this conference to great success!

Sofiane Amziane (Chair) - Polytech Clermont-Ferrand (France)
Mohammed Sonebi (Co-Chair) – Queens’ University Belfast (UK)