

# PREFACE

The rapidly changing world is facing many threats and serious challenges. The glory of modern industrialization has been in doubt with ample facts of environmental deterioration problems. Yet, development and survival are still the central issues facing a great portion of humanity. The world needs new role models of development, economy and industrialization characterized by environmental friendliness and sustainability. Construction industry is in the forefront facing today's challenges. Providing durable, efficient and effective infrastructure system, affordable housing, clean water, energy, communication and sanitation is fundamental to economic prosperity, social justice, political stability and quality of Life. The series of NOCMAT Conferences have proven to be a leading forum where scholars, governmental and non-governmental agencies, practitioners exchange innovations of low energy cement technologies, new materials and systems, and innovative material/structural technologies such as bamboo, natural fibers, etc. towards cost-effective, durable, environment-friendly, energy efficient and sustainable construction. The development of Innovative, Non-Conventional Materials and Technologies will also provide a significant role in eradication of poverty, creation of jobs, formation of global partnership for economic progress and social stability.

Non-conventional materials and technologies encapsulate innovation and sustainable use of novel technologies and innovative use of more established materials. Many non-conventional materials in the 21st century have their roots in traditional vernacular construction, including earth, used in Persia for thousands of years and called Kah Gel (unfired clay), lime and natural plant based materials, such as bamboo, straw and reeds. For traditional materials and techniques to meet modern demands of construction, cost and performance requires further development, innovative solutions and systematic scientific research. Meanwhile materials of the industrial age, including steel and concrete, must also deliver more sustainable solutions. Innovations include manufacturing processes, lower carbon materials; greater reuse of components on end-use, greater recycling of materials, reduced waste, multi-span life-cycle design and more prefabrication of components and buildings.

The 15th NOCMAT provided an international forum for information dissemination and exchange, discussions and debates on research and practice related to innovative construction materials and technologies with objectives for sustainable development. The conference attracted a wide range of academics, scientists, researchers, students, builders, designers, NGOs, policy makers and other industrialists from a wide variety of backgrounds, including fields of architecture, engineering, materials, sustainable and ecological technologies, biomaterials, materials sciences, environmental engineering and government agencies, etc. The conference attracted also specialists in geography, economists and administrators of natural resources. The conference themes include but not limit papers and presentations on fundamental science and applied research, case study reports and dissemination of innovations in the topics of NOCMAT. Specific conference themes included: lower carbon cements and concretes; advanced vegetal fibre composites in construction; innovative use of plant based materials such as bamboo, straw, hemp, curaua, sisal; timber materials and engineering; lime based materials; stone, unfired clay and earthen architecture.

The 15th International Conference on Non-Conventional Materials and Technologies (15NOCMAT2014) coincides with 30th anniversary of NOCMAT, after the first one held in Rio de Janeiro in 1984. In addition, 18 years passed since the foundation of abmtenc. This year it takes place in Pirassununga, Sao Paulo, which follows up the events organized in various places on Globe including previous successful ones in Paraíba - Brazil (2013), Changsha, Hunan - China (2011), Cairo, Egypt (2010), Bath, England (2009), Hanoi, Vietnam (2002), Bhubanewar, India (1997). Over the last several years, NOCMAT conferences were also held in Brazil (João Pessoa (2003);

Pirassununga (2004); Rio de Janeiro (2005); Salvador (2006); and Maceió Alagoas (2007) and in Cali, Colombia (2008).

The organizers of the 15th NOCMAT would like to thank all those who contribute with their work and thus help in the dissemination of clean and ecological materials and technologies making our world a little better. Thanks as well to those who helped in the organization of the event and PUC-Rio, USP, UFMG, CEFET MG, UFPB, CAPES, CNPq, FAPESP, FAPERJ, INFIBRA, Banco do Brasil and e-tex for their financial support.

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