

Preface

We live in an amazing world. Science and technology have advanced in such a way that it becomes possible to visualize living on another planet- perhaps only after another 20 years. Most known illnesses will be eradicated or at least reduced. Life will be prolonged to a never before imagined age. One is connected permanently with others through Internet. New constructions are being erected scraping the skies with nearly 1000m high buildings. And still in spite- and partly due to all these advances- the great majority of people live in misery without the minimum of nourishment, clean drinking water and decent housing. A very few, not by their hard work but often through abuse of financial power, benefit from those amazing advances. Industries are demanding more and more raw materials, existing now mainly in developing countries and creating havoc on earth searching for and exploiting these raw materials with the very cheap labour in these countries, producing the luxury products which are sold with colossal profits in industrial countries. The question arises: is it a blessing to have natural resources in the ground, which are being exploited and bring absolutely no benefit for the majority of the population? How about the change of our environment? Nature is responding with climate changes, freak storms and other natural disasters. The big centralized industries are not yet ready to stop polluting our land. Their ambition is to be the owner of the earth and to do what they think is good for them and not for the people. Big amounts of money are spent for the production of arms and not needed publicity to sell their polluting products for the few.

Now, sustainability goes together with moderation, meeting basic needs and a general well-being of the population with justice and human common social activities. Sustainability makes possible that a greater part of the population can follow up a life's dream or at least can have a decent meaningful life. Sustainability means as well that remaining natural resources should be preserved for future generations. Thinking about this and knowing that modern sciences have been studied and taught in schools and universities, considering only industrial non-renewable materials such as cement and steel, a new research line was started at PUC-Rio in 1979 by the present chairman of IC-NOCMAT, to investigate local renewable materials such as bamboo, vegetable fibres, soil composite and recycled materials such as rice husk ash, sugar cane ash among others, besides studying the application of local technologies such as Taipa, rammed earth, Kah-Gel (soil reinforced with wheat straw). This research line was denoted as "Non-Conventional Materials and Technologies- NOCMAT". The NOCMATs are referring to preindustrial Materials and Technologies which have been the normal practice during the centuries before the establishment of centralized industries in 20th century. With the implementation of centralized industries and the new concept of building individual houses at a large distance from each other, with shopping centres far from their homes, common social life of the old civilization was transferred. Now the inhabitants of new towns depend strongly on cars and living in isolation.

The 14th International Conference on Non-Conventional Materials and Technology, after 30 years activities at UFPB, returned to Joao Pessoa continuing the series of events which started in Rio de Janeiro in 1984, passed through Changsha, China, (2011), Cairo, Egypt (2010), Bath, England (2009), Hanoi, Vietnam (2002), Bhubaneswar, India (1997). Other conferences were organized in Joao Pessoa (2003), Pirassununga (2004), Rio de Janeiro (1999, 2005), Salvador (2006), Maceio (2007) and Santiago de Cali-Colombia (2008). The main concern of the conference is to disseminate research results of different groups from all five continents in the field of non-conventional materials and technologies (NOCMAT), presenting alternatives to the existing non-renewable polluting conventional materials. It addresses scientists, researchers and especially the young engineers, architects, designers and planners to get acquainted with new materials and technologies which certainly will influence their future choices, to make use of traditional sustainable materials such as soil, natural fibres, bamboo and agricultural, mineral residues besides discussing about the climatic constructions which was the basic tradition in India, Iran, Peru etc.

During the last 35 years of research and development into NOCMAT, we have shown many viable materials and technologies which could contribute towards the sustainability and ecological development. Unfortunately big industries are not interested in solving the problems in a humane way without big and immediate interest and wealth for those in power. The application and investigation into NOCMAT have not been as we have expected. We do not claim that we have the answers to solve all the problems of our time immediately but we show the direction and invite those in political power to invest in the application of NOCMAT which will contribute to the solution of the existing ecological and environmental problems. Large investments are still needed in R&D of those materials to extend the life cycles of the low-cost energy saving materials which in general produces oxygen and absorbs CO₂ generated by centralized industries.

The organizers of the 14NOCMAT would like to thank all the people who contributed to the success of the event, especially the students of G-NOCMAT group at PUC-Rio. Our thanks are also to Ursula Schuler Ghavami, who has contributed whenever it was necessary. Special thanks to Normando Perazzo local Chairman of the conference, and Ana Karla, who contributed in the design of the folders and the book of abstracts. Also thanks are due to Alexandr Zhemchuzhnikov, Salustiano and Ulysses who contributed in the organization and correspondence with the authors. We hope that all participants have returned home with some new information about NOCMAT which they will pass on to their colleagues and students so that we could propagate new knowledge.

Best wishes and we hope to see you during the next NOCMAT

Khosrow Ghavami,

Chairman 14NOCMAT 2013