

Volume - I

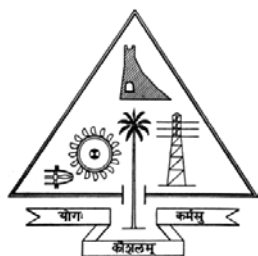
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Proceedings of
Third International Conference on
Materials for the Future
Innovative Materials, Processes, Products and Applications
November 6-8, 2013

Sponsored by **TEQIP - Phase II**

Organized by



Government Engineering College Trichur

ISO Certified and NBA Accredited Institution

Thrissur, Kerala, India

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Proceedings of International Conference on Materials for the Future - Innovative Materials, Processes, Products and Applications – ICMF 2013

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Preface

Dear Friends and Guests,

At the outset the Organizing Committee of ICMF 2013 extend a warm welcome to all of you to the Third International Conference on 'Materials for the Future – Innovative materials, processes, products and applications', ICMF 2013 to be held during November 6 - 8, 2013 at Government Engineering College Trichur, Thrissur, Kerala. The conference is sponsored by TEQIP Phase –II.

ICMF 2013 is intended to provide a platform for researchers, engineers, academicians as well as industrial professionals to present their research results and share their achievements. This conference provides opportunities for the delegates to exchange their ideas and experiences, build research relations and also to find partners for future collaboration. The objective of this conference is to initiate a creative discussion on the advances in the areas of Innovative materials, processes, products and applications. Apart from paper presentation sessions, the conference will include invited talks by eminent scientists and distinguished academicians and professionals on advanced trends in various fields of Engineering, in line with the theme of the conference.

This proceeding includes papers presented in the conference. All the submitted papers have been peer reviewed by the reviewers drawn from various fields of engineering, depending on the subject matter of the paper. The papers were selected on the basis of originality, significance, and clarity for the purpose of the conference. We hope that the presented papers as well as the invited talks will provide inspiration to all the participants in their future research.

We would like to thank all persons involved in organizing this conference for their hard and wonderful work. Thanks also go to the Bonfring, for their editorial service to this conference proceeding. We are also grateful to all people who have contributed to the success of ICMF 2013. We hope that all participants benefit scientifically from the proceedings and also find it inspiring in the process.

With best regards,

Organising Secretaries, ICMF 2013

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Department of Mechanical Engineering

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About the College



Government Engineering College, Thrissur, (GECT) established in 1957, is one of the most prestigious institutions in Kerala. The foundation stone was laid by Pandit Jawaharlal Nehru making it one of the oldest Engineering Colleges in Kerala. The college started functioning offering three basic branches in engineering viz. Civil, Mechanical and Electrical with an intake of 40 students in each branch. Since then GECT has marched ahead as one of the most sought after technical education centre in Kerala. Prof.S. Rajaraman, a civil engineer of international repute and author of many engineering books was the first Principal. He along with Prof. M.P. Mathew and Prof. V.S. Nair (the then Head of the Departments of Mechanical and Electrical Engineering respectively) formed the triumvirate that gave the college a strong footing and set the pace for the onward growth and development of the college. The college is affiliated to University of Calicut.

The college campus is spread over an area of 75 acres and located at Ramavarmapuram, 5km from Thrissur city, 6 km from Thrissur railway station and 50 km from Kochi International Airport.

At present the institution offers eight undergraduate programmes and ten post graduate programmes. The college also offers post graduate course in computer applications (MCA). The college is an approved research centre for doing PhD in various engineering disciplines under the University Of Calicut as well as a QIP centre for doctoral programmes. Courses offered by college

have been accredited by the National Board of Accreditation. GECT is also an ISO 9001:2008 certified institution for the Quality Management Systems of its various UG and PG programmes. The Technical Education Quality Improvement programme – Phase II (TEQIP-II) was launched officially in GECT from 2010.

The institute is well networked with the industry, and it has been helping the industry to grow through focused training and consultancy programmes, through effective industry institute interaction. The mutual gain is obvious, seen from the placement record of the institute. Many of the alumni occupy top managerial and key technical positions in industries within the country and abroad.

ICMF-2013 Chairman's Message

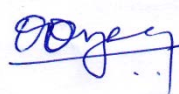


Dear Participants

On behalf of the conference organizing committee, it is my pleasure to warmly welcome you to the “International Conference on Materials for the Future (ICMF 2013)” at Govt. Engineering College Thrissur. This conference, now in its third edition, provides opportunities to the delegates to exchange their ideas and experiences and build research relationships for future collaboration. The objective of this conference is to initiate a creative discussion on the advances in the areas of Innovative materials, processes, products and applications. Apart from paper presentation sessions, the conference will include invited talks by eminent scientists, professors and professionals on advanced trends in various fields of Engineering. This edition of the conference is funded by TEQIP Phase II.

It gives me immense pleasure in bringing out the Proceedings of ICMF-2013 on this auspicious occasion. I hope the proceedings of this conference will inspire the research community to pursue future studies.

I greatly appreciate the cooperation extended by the Technical and Advisory committees. I take this opportunity to express my sincere thanks to the conference organizing committee members who started working on the preparation long before and also the session chairs, reviewers, and volunteers for their efforts to make the conference a grand event.

A handwritten signature in blue ink, which appears to read "Dr. K. Vijayakumar". The signature is written in a cursive style.

Dr.K. Vijayakumar

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