

## WELCOMING ADDRESS

by

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Dear Colleagues, Ladies and Gentlemen,

It is a pleasant duty and great honour for me to extend on behalf of the Bureau of Theoretical & Applied Mechanics of the Academy of Athens, of the Hellenic Society of Theoretical & Applied Mechanics (HSTAM), and of the Foundation of P. Theocaris to all participants of the **16th European Conference of Fracture** a cordial welcome. A special mention should be made to the late Professor P. Theocaris, former President of HSTAM for his outstanding contribution to the Fracture Mechanics. He was the founder of a school in Fracture Mechanics whose students are eminent researchers, some of them participants in this Conference. It is indeed fortunate thanks to the tireless efforts of Professor M. Gdoutos and the hospitality of the sponsors to bring together more than 700 participants from 49 countries in the beautiful city of Alexandroupolis such as Academicians, eminent Professors, distinguished researchers and lecturers, leading investigators in the Theoretical, Experimental and Computational Field of Fracture Mechanics.

This field has gained considerable importance in numerous branches of engineering and applied sciences. More specifically the objective of the 16<sup>th</sup> European Conference of Fracture (ECF16) is the analysis of structural integrity of engineering structures, components, systems and their associated materials by using mainly the principles of fracture mechanics. This discipline is based on the realistic assumption that all materials contain crack-like defects from which failure may initiate. A major objective of Fracture Mechanics is to study the load-carrying capacity of structures in the presence of initial defects, where a

dominant crack is assumed to exist. Design by fracture mechanics necessitates knowledge of a critical crack size and a parameter which characterizes the propensity of a crack to extend. In selecting materials for structural applications we must choose between materials with high yield strength, but comparatively low fracture toughness, or those with a lower yield strength, but higher fracture toughness.

The emphasis in this conference is given to the failure of nanostructured materials as well as nanostructures and micro- and nanoelectromechanical systems (MEMS and NEMS). A profound knowledge of **physical phenomena** is particularly necessary in problems of Fracture Mechanics to properly interpret the results obtained via numerical simulation, and moreover to reduce the computational effort and time.

In closing, I would like to express my warmest thanks to all colleague-lecturers as well as to the sponsor and hosting institutions, and in particular to Professor Gdoutos, Mrs Gdoutos and his associates for the excellent preparation of the Conference.

My warmest wishes to all of you for a fruitful Conference and a pleasant stay in the beautiful city of Alexandroupolis.