

## ENGINEERING

This year's contributions to the Engineering Panel reflect the breadth and width of this field. Our Panel received several papers of high technical standard and good readability; but due to volume limitations we could accept, as in previous years, only two of them. Nonetheless we would like to encourage all people who have not seen their paper published in the Annals during this year, to try again in the future.

The first paper outlines a new experimental method of non-destructive testing for the investigation of the internal structure of materials that are used in engineering applications. As it well known, materials with no structural defects at micro level and yet suitable for use in a demanding environment cannot be found at present. Stringent requirements for reliability and safety of engineering systems necessitate the availability of effective techniques for determining the distribution of local variations of material density with micrometric accuracy and furthermore, for predicting crack growth and instability. In the current paper, whose lead author and Marie-Curie Fellowship recipient is Dr. Daniel Vavrik from the Czech Republic, a method is proposed that contributes to the understanding of the mechanics at micro level and possibly could lead to safer engineering structures.

The second paper is authored by Dr Zimeras of the University of the Aegean who is also a MCFA Fellow. Dr. Zimeras puts forward a method that is useful for supporting the medical treatment of patients based on the so-called technique of "virtual simulation". According to this, rather than using the data of the physical patient for simulating e.g. a beam radiotherapy treatment in an oncology clinic, he suggests to perform the simulation on the basis of the computed tomography data set of the patient. The latter is much less expensive in terms of infrastructure and personnel. According to the author, the current level of technology allows use of this method for many treatment cases, replacing completely the conventional simulator that relies on physical patient data.

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