

Editorial corner – a personal view

Panacea: A Greek ancient myth ‘living’ in materials science?

G. C. Psarras*

Smart Materials & Nanodielectrics Laboratory, Department of Materials Science, University of Patras, 26504 Patras, Hellas (Greece)

Panacea (Πανάκεια in both ancient and modern Greek) in mythology was the goddess of universal remedy being the daughter of Asclepius and Epione. She was considered capable to cure all illnesses, a human demand not possible to be satisfied by pharmaceutical science. Nowadays, during the pandemic conditions of Covid-19, such a treatment should be more than welcome, although impossible. The ability of *Panacea*, with various names, has been requested metaphysically during the centuries many times. Metaphorically, *Panacea* is the solution to all kind of problems.

Almost from the late ‘90s till now, declarations of discovering unique ‘super-materials’ which could achieve ‘super-performance’ in a wide range of properties (including mechanical, electrical, magnetic, optical, biological etc.) have been reported in materials science. It is true and well-documented that, in this period, materials science has made tremendous progress. Carbon allotropes, two-dimensional monolayers, transition-metal dichalcogenides, perovskite-type materials, aerogels, thermoelectric materials, bio-inspired polymers, polymer nanocomposites, self-healing materials and metamaterials indicate only partially the conducted progress.

However, the resulting question is: ‘Can a single material address all technological needs and requests? Does a *Panacea* exist in materials science?’ Honestly, it is very difficult to give a positive answer. Experimentally proved properties or theoretically calculated/estimated values of properties for a single material, although considered as superb, cannot fulfill

all the requirements of current high-tech applications. Moreover, the rapidly varying social needs create new emerging technological demands and knowledge questions for materials science.

Scientific research targeting new materials, exploiting more aspects of their performance and focusing on the synergy, the co-operation of different materials constructed in entirety, seems to be the path for approaching each time the required multi-performance. More than the nominal values of specific materials’ properties, the synergetic effects and the incorporated multi-functionality in multi-scale composites constitute the ongoing breakthrough.

Matter and materials should be studied as a function of time, tending asymptotically to the overall knowledge, providing answers and solutions to problems not even conceived yet.



Prof. Dr. Georgios C. Psarras
Member of the International Advisory Board

*Corresponding author, e-mail: G.C.Psarras@upatras.gr
© BME-PT