

Editorial

FACING NEW FRONTIERS IN CHEMISTRY

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At the middy of the second decade of XXI the modern man would like knowing the main concepts, trends and frontiers the science (fundamentals) and technology (applications) are preparing for the rest of the growing century. Roughly the main humankind chapters can be identified as: organisms (living bodies), medicines (health and life prolongation), food (the earth supply), energy (life and environmental fuel), and communication (spiritual needs). Going down to specific disciplines, these items may be defined, modeled, controlled, planned, and functionalized by a systematic research management whose the first 14 challenges, for the first 14 years of XXI may be eventually be learn also as new frontiers in Chemistry:

1. *Personal genome* it is for sale [1]: „Sequencing will be so cheap and so easy to access that everybody could get sequenced if they want. It'll be iPod pricing; the \$1,000 genome is within sight, and ... that barrier has been smashed.”
2. *Global warming and climatic changing* [2]: „To those who say today's warming is natural variation, the natural forcings are actually pushing us in the wrong direction; If you have enough arbitrary parameters, you can make any model work; Unfortunately, the data now show us that we have underestimated the climate crisis.”
3. *Building small* the societal economy through the „eyes” of nano-technology [3]: „ The nanotechnology ideas finding their way into construction in a practical way are probably now starting to gain momentum.”
4. *The race for sunlight* – the sustainable energy [4]: „There are so many new PV (photovoltaics) and CSP (concentrated solar power) projects being discussed today, I really can't keep up; Future prospects for solar are good, but without state renewable portfolio standards the scale of the plants is likely to come down.”
5. *Men-action like the digital element* of life sciences [5]: „Major firms have used acquisitions to expand in lab informatics; A new breed of researchers born in the digital age will influence decisions on how computers and automation evolve in the laboratory.”

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6. *Chemical weapons* (for mass destruction) – lessons without repetition [6]: „The WWI ends, but research continues... ”
7. *Pollution* – the never ending story [7]: „Where do the chemicals come from? ... Are they ever going to go away? We are lucky to have scientists driven this work for many years!”
8. *The diet in XXI century* – health by plants vs. alimentary suppliers [8]: „The tenet that protein is a cornerstone of a healthy diet, that it helps us feel full and more satisfied, remains constant; Soy is the only common plant protein that contains sufficient quantities of the essential amino acids.”
9. *X- Rays after the first 100 years* of epochal discoveries (viz. penicillin, DNA, tRNA, B-12 vitamin, lisosime, G-protein etc.) [9]: „The most definitive statement we can make about the future of X-ray crystallography is that it has no future in its present form.”
10. *The anti-HIV molecule* – aiming the secrets of the secret antagonist [10]: „small molecules, the smaller they are the cheaper ... to make, and the easier .. to formulate.”
11. *Chemistry as a business* – the possible solution of the global crisis by global needs [11]: „with in-house R&D pared down, companies will look for innovation; renewable rebound from hype deficit; above-average demand by cars and energy production.”
12. *Sugar and salt* – from the original sin to the lost paradise of the alimentary consumerism [12]: they „have attributes as well: function, color, texture, preservation, fermentation.”
13. *Fighting cancer* – from nanochemistry to nanotechnology to nanomedicine [13]: „By conjugating camptothecin to a polymer nanoparticle, the drug gets delivered inside tumor cells. It’s right where you want it to be.”
14. *Graphene* – the miraculous multidisciplinary mater of XXI [14]: „graphene products are here today. They’re not five years away; graphene forms a strong conductive circuit that tolerates flexing and bending and stands up well!”

With all these, one can hope only an integrative approach such as the nanochemistry can face the challenges which act on many levels, either on vertical (molecule-man-environment-universe) as well as horizontally (man-communication-economy-long life preservation) directions in human evolution towards an equilibrated present and a sustainable future – to which also the present Journal venture aims to give an international academic contribution.

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