

A New Journal for a New Useful Science and a Just World

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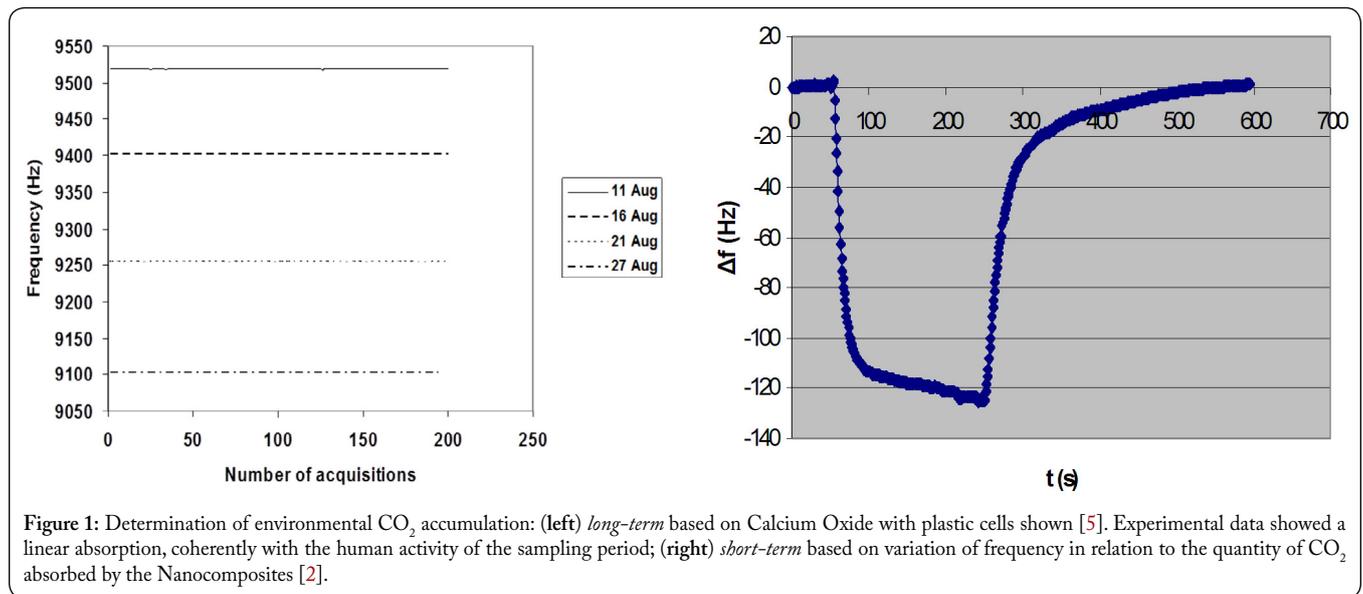
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Editorial

The warning for humanity was never so serious from his origin and the overall world priority has to be rewritten centering the emphasis on the immediate solution of the dramatic problems facing humanity in energy, health, environment and worldwide exploding conflicts. From their solution indeed depends the human race own survival and they can be solved only by a worldwide cooperation in the areas of science and technology including Russian Federation and United States, as I have been asking. Only a full cooperation can do it since time is running out and only Research and Development [1] is capable to solve the dramatically growing problems in society, energy, environment, space, hardware and cancer [2]. With this new Journal named NanoWorld we aim to find a solution to the open problems of the above sectors in order to achieve the scope to close this circle which otherwise could lead to the end of humans survival. In the last few years the problems are grown in all sectors of society, from energy to environment and natural disasters, from cancer to hardware. Attempts to solve them at the national scale failed partly because the magnitude of the crisis induced by the derivatives appears to have far lasting devastating effects in many countries (continuously coming to light and above any expectation) and largely because the magnitude of the technological problems long time underestimated became unmatched at the scale of any single nation regardless of its size. Even on space, where hold on licenses impacted negatively on 2016-2017 joint missions to ExoMars and to Soyouz exploitation. Temperatures and carbon pollution are raising worldwide with extreme climate changes and increase in public health threats appear associated with extreme weather. Incidentally global carbon dioxide is on the rise synchronously with global temperature and sea water level. At the same time are more intense everywhere energy wastes, droughts, wildfires, hurricanes, super storms and floods. These well known challenges are in front of humanity and the time is running out on us very fast. Well has done Obama to set for all USA companies the 30% reduction in the CO₂ production, but this does not yet compensate for the big USA refusal of the past to sign the Kyoto treaty for the CO₂ reduction (as I responded months ago to the question raised via email by the White House about the Carbon Pollution Standards Comment on the Clean Power Plan Proposed Rule). USA, Russia, Europe, India and China should contribute to a massive CO₂ reduction that could increase our hope to save humanity from a disaster, but to warrant success we should quickly enhanced our research activity in the sector (Figure 1) and move our energy sources from the nonrenewable dangerous ones (heavy Oil, Coal, Geothermal, Nuclear fission, Gas hydrates, Shale oil) to the renewable ones (Solar energy, Ocean thermal energy conversion, Fusion) that however require extensive acceleration in science and technology investments and a more extensive worldwide cooperation. Energy is strongly interlinked with power generation, automation and environment [2], while similarly is happening (at the nanoscale)

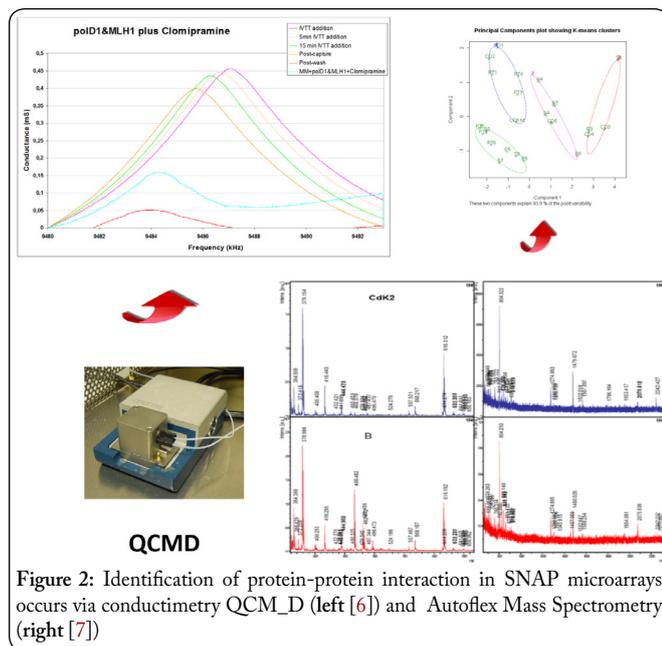
for really intelligent hardware [3, 4], being strongly interlinked to communication and environment. Indeed the risk of

irreversibly declining resource facing an increasing demand which cannot be met. The world passed its peak of rate of oil



upcoming ecological disasters, including global warming, can be reduced or avoided with the development of new energy sources nanotechnology-based [1] from sun and hydrogen. Oil now fuels the modern world and brought great changes to economies and lifestyles in less than 200 years. Nothing else to

discoveries in the 1960s, but there is a lag time from discovery to full production. Although estimates differ slightly, it seems that the peak of world oil production will be reached by 2020. Then questions started to be raised as to using hydrogen, fuel cells and fusion for fuel sources. Neither is a primary energy source. Hydrogen must be obtained by using some other energy source. Usually it is obtained by the electrolysis of water, or by breaking down natural gas (methane CH₄). Hydrogen is highly explosive, and to be contained and carried in significantly usable amounts it has to be compressed to hundreds of pounds per square inch. Carbon nanotube could become an answer if further research is accelerated [1]. Hydrogen is not easy to handle, and it is not a replacement for pouring gallons of gasoline into an automobile tank. Fuel cells have to be fuelled, most use hydrogen or some derivative of oil, but fuel cells are not a source of energy in themselves. Oil is a unique energy source that has no complete replacement at present unfortunately; any and all suggestions of means to replace oil are welcomed. Cheerful myths are enthusiastically embraced, namely trillion barrels of economically recoverable oil in the Colorado Plateau oil shales, dams and their reservoirs as a source of indefinitely renewable energy; solar, wind, geothermal, and hydro-electric power as supplier of the electrical needs of the Earth's over 10 billion people in the next fifty years; oil from oil sands and biofuels as substitutes of the several millions barrels of oil the world now uses daily; electricity produced from the various alternative energy sources will provide the mobility which oil now gives to the billion vehicles. Regrettably, none of these cheerful myths appear to be valid. The mega-myth is the popular public placebo that "The scientists will think of something". Unfortunately the reality appears to be that the world is rapidly running out of a resource that in many ways is irreplaceable. The result will be a great change in economies, social structures, and lifestyles. We have been living on a great fossil fuel inheritance accumulated during more than 500 million years. We will soon exhaust this capital, and we will have to get a new one. Fusion could be one, involving the fusion of either of two hydrogen isotopes, deuterium or tritium. Deuterium exists in



date can equal the enormous impact which the use of oil has had on so many people, so rapidly, and in so many ways around the world. This abuse was caused by a wrong emphasis in consumption enormous exponentially growing waste in food, clothing, materials, metals and ...oil ! There is then a clear need for a new paradigm for humanity to change direction and thinking in order to save rather than waste, but I am afraid that now is not sufficient since is too late to just stop the waste. Oil is a very finite resource now and is the source of carbon pollution. The common question "How long will oil be produced?" is the wrong question. The critical question is "When is the date of the maximum daily amount of world oil production-the peak?" After that oil will be an

great quantities in ordinary water, and from that perspective fusion is theoretically an almost infinitely renewable energy resource. Fusion is the energy that powers the Sun, and that is the problem, since the temperature of the Sun ranges from about 10,000 degrees Celsius on its surface to an estimated 15 to 18 million degrees in the interior where fusion takes place. Containing such a temperature on Earth in a sustainable way and harnessing the heat to somehow produce power has so far escaped all efforts. Here humanity should unite his efforts much more decisly from East to West and with quite more

Russian Federation in 1997 and leader of the opposition I have been occasionally meeting (Figure 3), and in Washington the political aggression for healthcare reform and Iran negotiation to Barack Obama, the President of USA I have been constantly endorsing. Humanity survival depends indeed from a peaceful relationship among and within the two biggest nations and as I have been publicly appealing in Padova to Russia and USA [8], from their nuclear and strategic disarmament towards joint research and development in the key sectors now indicated by the NanoWorld Journal.



Figure 3: Images of a meeting in Moscow of the european socialist party with russian liberal and socialists parties to which attended also Claudio Nicolini (left) and Boris Nemtsov (while speaking at the right) in late June 2012.

resources. One last problem still escaping a solution is cancer [6, 7] that is being studied with some result at molecular scale (Figure 2); is strongly interlinked to differentiation, ageing and proliferation, but also to ecology, and solving it with more coordinated efforts worldwide subtracting to corporations that have been so far quite ineffective in both side of the Ocean linked to health institutes, and we will solve it only approaching with quite more focus on the molecular quantitative scale correlating to all pending problems in medicine (ageing, differentiation, metastasis) for human race survival. Linking these six problematic sectors in a periodic manner through the Nanoworld Journal will help to overcome the growing economic, health and technological problems in front to human society and to make just the World in which we live. Particularly shocking are both in Moscow the assassination nights ago of Boris Nemtsov, the vice Prime Minister of

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