

Nanotechnology Perceptions*

A REVIEW OF ADVANCED TECHNOLOGIES AND THEIR IMPACTS

Vol. 1

№ 1, March 2005

What is nanotechnology? <i>J.J. Ramsden</i>	3
Measurement in the nanoworld, <i>G.N. Peggs</i>	18
Nanotechnology and cosmology, <i>G.C. Holt</i>	24
Micro and nanoprocessing techniques and applications, <i>A.G. Mamalis, A. Markopoulos and D.E. Manolakos</i>	31
The music of the nanospheres, <i>J.J. Ramsden</i>	53

№ 2, July 2005

Nanotechnology—should we be worried? <i>R.W. Whatmore</i>	67
Biomedical functional surface generation with control at the nanoscale, <i>A.G. Mamalis, S.N. Lavrynenko, A.I. Grabchenko, L.G. Duebner and N.M. Kirjukhin</i>	79
Haptic sensing technologies for a novel design methodology in micro/nanotechnology, <i>M. Calis and M.P.Y. Desmulliez</i>	89
A critique of the European commission's proposal for the 7th research framework programme, <i>H. Matthews</i>	99
Biooptical computing and molecular optoelectronics, <i>J. J. Ramsden</i>	107

№ 3, November 2005

Nanotechnology: radical new science or plus ça change? <i>P. Moriarty</i>	115
NanoDebate	119
NanoDictionary	147
Semiconducting nanostructures—materials for spintronics, <i>P.J. Kervalishvili</i>	161
Nanostructural elements of some high temperature semiconductors, <i>P.J. Kervalishvili</i>	167
(B) The Singularity is Near, by R. KURZWEIL (reviewed by G.C. Holt)	173

Vol. 2

№ 1a, March 2006

Essays on Nanotechnology Implications: Introduction	3
Nanotechnology Dangers and Defenses, <i>R. Kurzweil</i>	7
Molecular Manufacturing: Too Dangerous to Allow? <i>R.A. Freitas Jr</i>	15
Nano-Guns, Nano-Germs, and Nano-Steel, <i>M. Treder</i>	25
Molecular Manufacturing and 21st Century Policing, <i>T.J. Cowper</i>	27
The Need For Limits, <i>C. Phoenix</i>	31
Globalization and Open Source Nano Economy, <i>G. Prisco</i>	35
Cultural Dominants and Differential MNT Uptake, <i>D. Broderick</i>	41
Nanoethics and Human Enhancement: A Critical Evaluation of Recent Arguments, <i>P. Lin & F. Allhoff</i>	47
Strategic Sustainable Brain, <i>N. Vita-More</i>	53
Is AI Near a Takeoff Point? <i>J.S. Hall</i>	57
Singularities and Nightmares: the Range of Our Futures, <i>D. Brin</i>	63

№ 1b, May 2006

More Essays on Nanotechnology Implications: Introduction	83
Nanoethics and Technological Revolutions: a Précis, <i>N. Bostrom</i>	85
From the Enlightenment to N-Lightenment, <i>M.E. Buerger</i>	89
What Price Freedom? <i>R.A. Freitas Jr</i>	99
The (Needed) New Economics of Abundance, <i>S. Burgess</i>	107
Economic Impact of the Personal Nanofactory, <i>R. A. Freitas Jr</i>	111

* Please note the following abbreviations: (L) Letter to the Editor, (B) Book Review, (SB) Science Briefing, (MA) Matters Arising and (W) From a Correspondent.

Corporate Cornucopia: Examining the Special Implications of Commercial MNT Development, <i>M. Vassar</i>	127
Molecular Manufacturing and the Developing World: Looking to Nanotechnology for Answers, <i>D. Maclurcan</i> ...	137
Considering Military and Ethical Implications of Nanofactory-Level Nanotechnology, <i>B. Wang</i>	143
Molecular Manufacturing and the Need for Crime Science, <i>D. Osborne</i>	151
Safer Molecular Manufacturing Through Nanoblocks, <i>T. Craver</i>	155
Are We Enlightened Guardians, or Are We Apes Designing Humans? <i>D. Mulhall</i>	161
CRN Task Force essays: a European commentary, <i>G.C. Holt</i>	167

№ 2, July 2006

Exploring whether ‘nano-’ is always necessary, <i>J. Harris and D. Ure</i>	173
Starting off on the wrong foot: the public perception of nanotechnologies and the deficit model, <i>F. Neresini</i>	189
Nanotechnology: saviour or curse in today’s environment? <i>G.C. Holt</i>	197
The role of nanoelectrochemistry in nanotechnology, <i>C.M.A. Brett</i>	205
The UK microsystems and nanotechnology network, <i>H. Clare</i>	213
(L) <i>C. Phoenix</i>	217

№ 3, November 2006

Fullerenes—an attractive nano carbon material and its production technology, <i>M. Arikawa</i>	221
The growth of nanotechnology literature, <i>R.N. Kostoff, R.G. Koytcheff and C.G.Y. Lau</i>	229
The magic of nano, <i>D.M. Berube</i>	249
The NanoDialogue project, <i>L. Amodio</i>	257
Does production of the world’s highest-tonnage manufactured item often involve nanotechnology? <i>M.A. Hubbe</i>	263
NEMS—emerging products and applications of nano-electromechanical systems, <i>S. de Haan</i>	267
Nanotechnology: new technology but old business models? <i>J.M. Wilkinson</i>	277
The biological effects of nanoparticles, <i>P.A. Revell</i>	283

Vol. 3

№ 1, March 2007

Where is nano taking us? <i>J. Baumberg, L. Cronin, M. Gee, M. Kearnes, P. Macnaghten, H. Makatsoris, J. Ramsden, R. O’Reilly and M. Webb</i>	3
The narrative dimension of nanotechnology, <i>E. Mordini</i>	15
Nanoscience and nanotechnology initiatives in India, <i>D.K. Dutta</i>	25
Challenging biomorphic sensing: the RECEPTRONICS project, <i>M. Tartagni</i>	35
On the sensitivity, selectivity, sensory information and optimal size of resistive chemical sensors, <i>L.B. Kish, J. Smulko, P. Heszler and C.-G. Granqvist</i>	43
(L) <i>H. Matthews</i>	53

№ 2, July 2007

Evaluating microscopic robots for medical diagnosis and treatment, <i>T. Hogg</i>	63
Biological molecular motors for nanodevices, <i>J. Youell and K. Firman</i>	75
Prodding the cosmic fabric with nanotechnology, <i>C. Binns</i>	97
In the beginning there were nanoparticles, <i>G.C. Holt</i>	107
Philosophy of societal impacts for nanotechnology: a pedagogical approach, <i>S. Dunn</i>	117
Standardization for nanotechnology, <i>P. Hatto</i>	123
(B) Military Nanotechnology, by J. ALTMANN	131

№ 3, November 2007

Carbon nanotubes and nanofibres, <i>B.O. Boskovic</i>	141
Single spin devices—perpetuating Moore’s law, <i>S. Bandyopadhyay</i>	159
The coming invasion of the medical nanorobots, <i>S. Martel</i>	165
Scientific constructions of nanobiotechnology, <i>A. Saniotis</i>	175
The benefits of applying microsystems in radiochemistry, <i>G. Janssens-Maenhout</i>	183
Prospects for environmental nanotechnologies, <i>D. Rickerby and M. Morrison</i>	193
(B) Nanotechnology Measurement Handbook: a Guide to Electrical Measurements for Nanoscience Applications, by the staff of KEITHLEY INSTRUMENTS	209

Vol. 4

№ 1, March 2008

Editorial	3
Ultraprecision machine tools—design principles and developments, <i>P.A. McKeown, J. Corbett, P. Shore and P. Morantz</i>	5
Utility Fog: the machine of the future, <i>J.S. Hall</i>	15
Selected papers from the First International Conference on Spin Electronics: Novel Physical Phenomena and Materials (October 2007, Tbilisi)	23
Quantum interference depression in thin metal films with nanostructured surfaces, <i>A.N. Tavkhelidze, A. Bibilashvili, L. Jangidze, B. Billenberg and G.F. Rempfer</i>	25
Investigation of the photostimulated crystallization and relaxation of internal mechanical pressure in silicon-on-insulator epitaxial nanostructures, <i>A. Bibilashvili, N. Dolidze, Z. Jibuti, R. Melkadze and G. Eristavi</i>	29
Persistent photoconductivity and energy gap of GaAs and InP, <i>G.E. Zardas, P.H. Yannakopoulos, Ch.I. Symeonides and P.C. Euthymiou</i>	35
Effect of anisotropy of optical reflexion from the (110) surface of gallium arsenide, <i>T.A. Minashvili, K.D. Davitadze and I.T. Trapaidze</i>	43
The Scenario Project: Introduction, <i>M. Treder</i>	47
The Center for Responsible Nanotechnology Scenario Project, <i>M. Anissimov, M. Buerger, S. Burgess, J. Cascio, S. Christensen, T. Cowper, T. Craver, F. Evitt, T. Hambling, B. Krone, L. Jandl, M. Kosal, M. Leis, P.J. Manney, H. Masum, L. O'Neill, D. Osborne, C. Phoenix, M. Rahimi, R. Rawstern, A. Rosa, D. Harries, J. Smith, M. Sonneborn, M. Treder, P. Van Nederveelde, N. Vita-More, R. Wagner, B. Wang and N. Welch</i>	51
Commentary on “The Center for Responsible Nanotechnology Scenario Project”, <i>A. Nordmann and M. Kearnes</i>	65
(B) Smart Nano and Micro Particles, <i>edited by K. KONO AND R. ARSHADY</i>	73
(B) NanoManufacturing Handbook, <i>edited by A. BUSNAINA</i>	75

№ 2, July 2008

Harnessing the full potential of nanotechnology for wealth creation, <i>I. Gibson and S.R.P. Silva</i>	87
Is public science a public good? A debate on the future of university science	93
Science: exploration and exploitation, <i>J. Pethica</i>	94
Science is not a public good: it is an invisible college good, <i>T. Kealey</i>	98
Public science: a public good? <i>P. Moriarty</i>	101
Science, technology and civilization, <i>J. Ramsden</i>	107
Irresistible forces vs immovable objects: when China develops Productive Nanosystems, <i>T. Toth-Fejehl</i>	113
Selected papers from the First International Conference on Spin Electronics: Novel Physical Phenomena and Materials (October 2007, Tbilisi)	133
Ferromagnetism and spin dynamics in $\text{III}_{1-x}\text{Mn}_x\text{V}$ alloys, <i>J.K. Furdyna, M. Dobrowolska and X. Liu</i>	135
^{31}P nuclear spin qubits in a ^{28}Si nanowire: a scalable unit for quantum computation, <i>I. Shlimak</i>	147
Few-electron systems in a quantum dot in a magnetic field: Wigner phase and broken-symmetry spin-singlet state, <i>A.A. Avetisyan, K. Mouloupoulos and A.P. Djotyan</i>	155
Disorder effects in dilute magnetic semiconductors, <i>B.A. Aronzon</i>	165
Electroerosion dispersion-prepared nano- and submicrometre-sized aluminium and alumina powders as power-accumulating substances, <i>M.K. Monastyrov, T.A. Prikhna, A.G. Mamalis, W. Gawalek, P.M. Talanchuk and R.V. Shekera</i>	179
(B) Nanoethics: The Ethical and Societal Implications of Nanotechnology, <i>edited by FRITZ ALLHOF, PATRICK LIN, JAMES MOOR AND JOHN WECKERT</i>	189
(B) Nanotechnology: From the Science to the Social, <i>by S.J. WOOD, R.A.L. JONES AND A. GELDART</i>	197
(SB) Negative index of refraction and metamaterials, <i>G.C. Holt</i>	201

№ 3, November 2008

Public perceptions of nanotechnology: what can we infer from early studies? <i>F. Crettaz von Roten</i>	215
Commercializing nanotechnology innovations from university spin-out companies, <i>S. Lubik and E. Garnsey</i>	225
Concepts in nanomechanics, <i>M.C.L. Ward</i>	239
Selected papers from the First International Conference on Spin Electronics: Novel Physical Phenomena and Materials (October 2007, Tbilisi)	

Ni-rich nanoclusters in CdSb: influence on magnetic and transport properties and perspectives for spintronics, <i>E. Lähderanta, R. Laiho, A.V. Lashkul, K.G. Lisunov, I. Ojala and V. Zakhvalinskii</i>	249
Obtaining p-type ZnO films by the RBQE method, <i>T.V. Butkhuzi, T.G. Khulordava, M.M. Sharvashidze, N.G. Bukhsianidze, N.G. Gaphishvili, L.T. Trapaidze, E.E. Kekelidze and R.G. Melkadze</i>	257
Interferometry and scanning microscopy in asperity measurement of biomedical surfaces, <i>M. Wieczorowski, A.G. Mamalis, M. Rucki and S.N. Lavrynenko</i>	265
(SB) Quantum computation with photons, <i>A. Politi and J.L. O'Brien</i>	289

Vol. 5

№ 1, March 2009

The nanoscale, <i>J.J. Ramsden and J. Freeman</i>	3
Stable isotopes in nanotechnology, <i>A.A. Berezin</i>	27
A few lesser implications of nanofactories: global warming is the least of our problems, <i>T.T. Toth-Fejel</i>	37
Localizing and detecting single spins in semiconductor nanostructures, <i>J.P. Bird and L.G. Mourkh</i>	61
Gas sensors 1. The basic technologies and applications, <i>J. Hodgkinson, J. Saffell, J. Luff, J. Shaw, J. Ramsden, C. Huggins, R. Bogue and R. Carline</i>	71
Gas sensors 2. The markets and challenges, <i>J. Hodgkinson, J. Saffell, J. Luff, J. Shaw, J. Ramsden, C. Huggins, R. Bogue and R. Carline</i>	83

№ 2, July 2009

Editorial	119
Microsystems for the enablement of nanotechnologies, <i>A. Iles</i>	121
Carbon neutrality—what does it mean? <i>G.C. Holt</i>	135
Properties of two species of deadly nano-needles, <i>C.J. van Oss and R.F. Giese</i>	147
The bio–nano interface, <i>J.J. Ramsden</i>	151
(B) Molecular to Global Photosynthesis, <i>edited by M.D. ARCHER AND J. BARBER</i>	167
(B) Biological Nanostructures and Applications of Nanostructures in Biology, <i>edited by M. STROSCIO AND M. DUTTA</i>	171
(B) Smart Nanoparticles in Nanomedicine, <i>edited by R. ARSHADY AND K. KONO</i>	175

№ 3, November 2009

Towards a concept system for nanotechnology, <i>J.J. Ramsden</i>	187
Sustainability in a changing climate: The role of science, technology and government, <i>A. Broers</i>	191
Inflammatory and immune responses induced by nanomaterials: challenges and opportunities for future nanotherapies, <i>J.R. Cubillos-Ruiz, J. Hoopes, S. Fiering and J.R. Conejo-Garcia</i>	195
Limits of anti-optimization in MEMS design, <i>G. Bándi</i>	205
The applicability of iron and manganese precipitation bacteria in drinking water systems, <i>D.A. Ankrah and E.G. Sogaard</i>	209
The Center for Responsible Nanotechnology Scenario Project, <i>M. Anissimov, M. Buerger, S. Burgess, J. Cascio, S. Christensen, T. Cowper, T. Craver, F. Evitt, T. Hambling, B. Krone, L. Jandl, M. Kosal, M. Leis, P.J. Manney, H. Masum, L. O'Neill, D. Osborne, C. Phoenix, M. Rahimi, R. Rawstern, A. Rosa, D. Harries, J. Smith, M. Sonneborn, M. Treder, P. Van Nedervele, N. Vita-More, R. Wagner, B. Wang and N. Welch</i>	217
CRN scenarios 4 & 5: a commentary, <i>G.C. Holt</i>	227
(L) <i>H. Matthews</i>	233

Vol. 6

№ 1, March 2010

A Man in Process: the Meaning in the Seeking (<i>dedicated to Prof. P.J. Kervalishvili on his 60th birthday</i>)	3
Carbon nanotube synthesis and growth mechanism, <i>M. Kumar and Y. Ando</i>	7
Using plants for directly powering nanoelectronic circuits, <i>C. Himes, E. Carlson, R.J. Ricchiuti, D.W. Taylor, B. Otis and B.A. Parviz</i>	29
Surface nanomachining using scanning tunnelling microscopy with a diamond tip, <i>O. Lysenko, A. Mamalis, V. Andruschenko and E. Mitskevich</i>	41
All-optical logic, <i>E.K. Wolff and A. Dér</i>	51
Less is different, <i>J.J. Ramsden</i>	57

№ 2, July 2010

Editorial: The economic impact of early 21st century scientific research	71
Public Science—Public Good? <i>P. Moriarty and T. Kealey</i>	75
The public perception of nanotechnology: is it all about risk? <i>C. Groves</i>	85
Nanotechnology: the ethical challenge, <i>W.R. Bowen</i>	95
The Center for Responsible Nanotechnology Scenario Project, <i>J. Cascio, C. Phoenix and M. Treder</i>	104
Nanotechnology scenarios: ethics and science fiction, <i>D.P. O'Mathúna</i>	113
Carbon neutrality—a government dilemma? <i>G.C. Holt</i>	121
(B) Recent Advances in Nanoscience, <i>edited by M.M. MARISCAL AND S.A. DASSIE</i>	125
(B) Nanoethics: Big Ethical Issues with Small Technology, <i>by D.P. O'MATHÚNA</i>	127

№ 3, November 2010

Understanding sustainability innovation as a social process of knowledge transformation, <i>M. Yarime</i>	143
Commoditization of nanomaterials, <i>C. McGovern</i>	155
What is sustainability? <i>J.J. Ramsden</i>	179
Nanotechnology and nanobiotechnology—are they children of the same father? <i>A. Maitra</i>	197
(B) What Is Nanotechnology and Why Does It Matter? From Science to Ethics, <i>by F. ALLHOFF, P. LIN AND D. MOORE</i>	205

Vol. 7

№ 1, March 2011

From a fluorescent patch to picoscopy, one strand in the history of the electron, <i>P.W. Hawkes</i>	3
Synergetic modelling of sustainable development, <i>P. Kervalishvili, B. Meparishvili and G. Janelidze</i>	21
The impacts of nanotechnology	
Part I: Introductory material	
Part II: The main anticipated technical impacts	
Part III: Can nanotechnology contribute to tackling the grand challenges?	
Part IV: Towards a conclusion, <i>J.J. Ramsden</i>	28
Charged impurity scattering of electrons in quasi-two dimensional semiconductor systems, <i>Z. Gogua, P. Kervalishvili and G. Kantidze</i>	67

№ 2, July 2011

Nanotechnology and manufacturability, <i>M.J. Kelly</i>	79
Building expert consensus on problems of uncertainty and complexity in nanomaterial safety, <i>G. Hunt and M. Riediker</i>	82
The phases of matter, <i>W.P. Holland</i>	99
Food innovation and nanotechnology—do they go together?, <i>K. Groves, P. Titoria and W. Morley</i>	141
(MA) Carbon sequestration through forestry, <i>P. Snowdon</i>	149

№ 3, November 2011

The effect of nanotechnology on mitigation and adaptation strategies in response to climate change, <i>A.G. Mamalis, J.J. Ramsden, G.C. Holt, A.K. Vortselas and A.A. Mamali</i>	159
Nanotechnology and the potential for a renewable solar future, <i>A.J. Parnell</i>	180
Developing nano research in Russia: a bibliometric evaluation, <i>A.I. Terekhov</i>	188
The Matter Compiler—towards atomically precise engineering and manufacture, <i>D.Q. Ly, L. Paramonov, C. Davidson, J. Ramsden, H. Wright, N. Holliman, J. Hagon, M. Heggie and C. Makatsoris</i>	199
Chemical deposition of nickel with inclusion of ultradispersed diamonds, <i>A.G. Mamalis, A.I. Grabchenko, V.A. Fedorovich, J. Kundrak, Y. Babenko and T. Dovbiy</i>	218
(MA) Carbon footprint and carbon brainprint—what do they mean? <i>H. Matthews</i>	223

Vol. 8

№ 1, March 2012

Editorial: Freedom to tackle the grand challenges	3
Ferritin protein nanocages—the story, <i>E.C. Theil</i>	7

Forecasting Nano Law: Defining Nano, <i>I.L. Feitshans</i>	17
Biological cell printing technologies, <i>A. Faulkner and W. Shu</i>	35
The role of metrology and the UK National Physical Laboratory in nanotechnology, <i>C. Minelli and C.A. Clifford</i>	59
Nanomedicine and future body enhancement, <i>A. Saniotis</i>	76

№ 2, July 2012

Editorial: The independence of university research	87
Setting the foundations for new industries and opportunities: Summary of an international panel report	91
Nanotechnology for military applications, <i>J.J. Ramsden</i>	99
Principles of 3D modelling of the production and application of diamond composite materials, <i>A.G. Mamalis, A.I. Grabchenko, V.A. Fedorovich, D.V. Romashov and D.O. Fedorenko</i>	132
Higher education: a risk too far, <i>G.C. Holt</i>	139
The world of the smallest parts, <i>M. Dietiker, M. Vonlanthen and C. Meili</i>	149
(B) Nanoscale: Visualizing an Invisible World by <i>K.S. DEFFEYES AND S.E. DEFFEYES</i>	155
(B) Life in Europe Under Climate Change by <i>J. ALCAMO AND J.E. OLESON</i>	157

№ 3, November 2012

Editorial: The corporate responsibility of universities	167
Prevention of manufacturing defects of diamond composite materials by simulating the process at the micro level, <i>A.I. Grabchenko, D.V. Romashov, D.O. Fedorenko, V.A. Fedorovich, A.G. Mamalis and J. Kundrak</i>	171
Nanomaterials applications in “green” functional coatings, <i>J. Miao, K.W. Wong, W. Li, S.H. Ng, L.H. Keung, K.H. So, I.Y.M. Ho, R.K.C. Luk, L. Cai, C. Cheng, G.Y.Y. Tsang and P.W. Lee</i>	181
Development of the US National Nanotechnology Initiative in its First Decade, <i>J.M. Malin</i>	190
Nanotechnology: is it the exploitation of quantum effects? <i>G.C. Holt</i>	195
Designed synthesis of nanoparticles for a sustainable world, <i>V. Jamier, M. Varon, E. Gonzalez and V. Puentes</i>	205

Vol. 9

№ 1, March 2013

Editorial: The moral leadership of universities	3
Co-creative Value Manufacturing: a methodology for treating interaction and value amongst artefacts and humans in society, <i>N. Nishino</i>	6
The promise and challenges of nanovaccines and the question of global equity, <i>T. Stammers, G. Hunt and Y.J. Erden</i>	16
The Phases of Matter (continued), <i>W.P. Holland</i>	28
Formulation and solution of the boundary value problem of viscous liquid flow in a nanotube taking external friction into account, <i>R. Gogsadze, A. Prangishvili, P. Kervalishvili, R. Chikovani, V. Gogichashvili and N. Jibladze</i>	57
On a possible limit to economic progress, <i>J.J. Ramsden and G. Kiss-Haypál</i>	71

№ 2, July 2013

The offshore wind energy nano-industry, <i>J. Platts</i>	91
Nanogold’s chemical revolution, <i>J. Emsley</i>	96
The nanotechnology industry, <i>J.J. Ramsden</i>	102
Assessing the toxic risks of the nanotechnology industry, <i>J.J. Ramsden</i>	119

№ 3, November 2013

Editorial: The role of government in science	143
Modelling of dispersion quality of carbon nanotubes in thermosetting blends for capacitive behaviour enhancement of composite materials, <i>K. Papageorgiou, G. Maistros and A. Koufaki</i>	147
Carbon films for photovoltaic devices, <i>S.O. Rudchenko, A.T. Pugachov, V.E. Pukha, V.V. Starikov, S.N. Lavrynenko and A.G. Mamalis</i>	159

Intensive electron emission in a strong electric field in vacuum nanoelectronics and high-power electronics, <i>G.N. Fursey</i>	167
Determination of the diamond wheel structure in high-speed grinding using nanoindentation techniques: experimental and numerical simulation, <i>A.G. Mamalis, A.I. Grabchenko, D.V. Romashov, D.O. Fedorenko, D. Lagoudas, V.A. Fedorovich and J. Kundrak</i>	187
Public awareness and perception of nanotechnology in Malaysia, <i>S. Suhaimee, T. Serin, A.K. Ali, N.H. Sulaiman and Z. Ghazali</i>	198

Vol. 10

№ 1, March 2014

Editorial: Incoherence in EU science policy	3
Common law and nanotechnology: the issue of toxicity in tort litigation, <i>K. Hester, M. Mullins, F. Murphy and S.A.M. Tofail</i>	7
Regulation of nanotechnology: developing a level regulatory playing field for emerging materials, <i>C. McGovern</i>	24
Nanoparticle communications: from chemical signals in nature to wireless sensor networks, <i>S. Qiu, W. Guo, M. Leeson, S. Wang, N. Farsad and A. Eckford</i>	29
Simulation of the effect of sintering on the integrity of diamond grains in grinding wheels, <i>A.I. Grabchenko, D.V. Romashov, D.O. Fedorenko, A.G. Mamalis, D. Lagoudas, V.A. Fedorovich and T. Baxevanis</i>	42
Synthesis and characterization of mechanically milled nanocomposites—carbon nanotube-reinforced aluminium, <i>M. Tayyab, M. Mutahir, M. Sajid and A. Ali</i>	54
(SB) Cloaking devices: progress with metamaterials, <i>G.C. Holt</i>	61

№ 2, July 2014

Editorial: The scope of nanotechnology	79
Decommissioning of the Chernobyl (Ukraine) nuclear power plant: the intermediate spent fuel storage ISF-2 project, <i>F. Maltini</i>	81
Technology of semiconductor materials sensitive to different regions of the electromagnetic radiation spectrum, <i>N.P. Khuchua, N.D. Dolidze, N.G. Gapishvili, R.G. Gulyaev, Z.V. Jibuti, R.G. Melkadze and M.G. Tigishvili</i>	91
Climate change and the complexity of solutions for securing energy supply: the global Energy [R]evolution, <i>F. Maltini</i>	100

№ 3, November 2014

Editorial: Gullibility	151
Obtaining a ZnSe furnace charge from aqueous solution, <i>D.S. Sofronov, E.M. Sofronova, N.O. Kovalenko, V.V. Starikov, A.S. Gerasimenko, V.N. Baumer, A.M. Lebedinsky, P.V. Matejchenko, E.V. Grishina, S.N. Lavrynenko and A.G. Mamalis</i>	154
Snowflakes, snow crystals, hail and rain, <i>W.P. Holland</i>	164
Nanotechnology and Gaia, <i>J.J. Ramsden</i>	173

Vol. 11

№ 1, March 2015

Editorial	3
Surface science in photography, <i>R. Hofmann</i>	5
Lab-on-a-chip: Why aren't we all hypochondriacs?, <i>G.C. Holt</i>	20
Risks of nanotechnology in the food industry: A review of current regulation, <i>A. Azamat and S. Kunal</i>	27
Scientific convergence in the birth of molecular biology, <i>S.Y. Auyang</i>	31
Can you beat the commodity fraudsters?, <i>C.M. Howard</i>	55
(W) Exceptional Times, <i>S.A. Kadir</i>	61

№ 2, July 2015

Editorial: Maintaining national ascendancy	75
Energy security of the Southern Caucasus: opportunities and challenges, <i>A.G. Tvalchrelidze and P.J. Kervalishvili</i>	88

The critical temperature and the atmosphere, <i>W.P. Holland</i>	106
(B) Advances in Applied Nanotechnology for Agriculture (ACS Symposium Series 1143), <i>edited by B. PARK AND M. APPELL</i>	116
(W) Man's increased efficiency at work is influenced by his wife, <i>S.A. Kadir</i>	118

№ 3, November 2015

Editorial: The future of Wikipedia	131
The nucleus of an atom and the periodicity of the elements, <i>W.P. Holland</i>	136
Photocatalytic antimicrobial coatings, <i>J.J. Ramsden</i>	146
An unhealthy obsession with fluoride, <i>D. Cross</i>	169
(W) The care of VIPs, <i>S.A. Kadir</i>	186

Vol. 12

№ 1, March 2016

Editorial: Britain and the EU	3
Nature or a question of development: East and West; freedom, culture, religion and science, <i>P.J. Kervalishvili</i> ..	15
How can we face critical problems of humanity in our era?, <i>K.N. Spentzas</i>	17
Doomsday scenarios: an appraisal, <i>J.J. Ramsden</i>	35
Il Mediterraneo ancora una volta al centro della storia, <i>G. Belingardi</i>	47
(MA) Whither Wikipedia?, <i>D. Cross</i>	50

№ 2, July 2016

Editorial: The future of cities	63
Aircraft cabin air contamination and aerotoxic syndrome—a review of the evidence, <i>F. Cannon</i>	73
A paradigm shift to sustainable evolution through creation of universal ties, <i>S. Watanabe</i>	100
(B) Watermelons by J. DELINGPOLE	130

№ 3, November 2016

Editorial: Outsourcing public services	147
A review of graphene radio frequency applications: Now and beyond, <i>T. Leng, X. Huang, K.H. Chang, J.C. Chen, X. Zhang and Z. Hu</i>	153
Hospital infection control: Ultraviolet germicidal irradiation's role in the war against infectious diseases, <i>D. Jones</i>	165
A boundary problem of micro- and nano-electronics, <i>R. Gogsadze, A. Prangishvili, P. Kervalishvili, R. Chiqovani and V. Gogichaishvili</i>	173

Vol. 13

№ 1, March 2017

Foreword: Smart Sensor Systems for Self-Care, <i>P. Thomas and I. Rafi</i>	3
The role of self-care and the use of smart sensors in the UK's health provision, <i>R. Sullivan and I. Rafi</i>	5
Does health spending need to outpace GDP per head?, <i>P. Thomas</i>	17
Corroboration of the J-value model for life-expectancy growth in industrialized countries, <i>P. Thomas</i>	31
The take-up of near-patient testing (lab-on-a-chip), <i>G.C. Holt</i>	45
Applying digital early warning systems to healthcare, <i>L. Pearce</i>	55
Home-based care: Implications for education and insurance providers, <i>R. Summers and R. Wheatcroft</i>	61
Can smart sensor systems save the NHS?, <i>J.J. Ramsden</i>	69
(B) From Science to Start-Up: The Inside Track of Technology Entrepreneurship by A. SETHI	81

№ 2, July 2017

Editorial: Education	95
How <i>not</i> to win over a concerned public—the history of “fracking” in Fylde, Lancashire, <i>M. Turner</i>	105
Assessing technological innovation: A necessary uphill struggle, <i>D. Callahan</i>	113
Evolutionary and archaeological perspectives on estimating the likelihood of civilization collapse, <i>C.M. Smith</i>	116

The nuclei of atoms in Periods 4, 5, 6 and 7, <i>W.P. Holland</i>	123
Demarcation of the absurd in nanotechnology, <i>J.J. Ramsden</i>	128
Obsolete assumptions, <i>G.R. Sampson</i>	132
(W) Guardian angel, <i>S.A. Kadir</i>	137

№ 3, November 2017

Editorial: Administrative failure	151
The effect of different nanoshells on the solar–thermal conversion of microencapsulated phase-change material, <i>A. Tong</i>	161
And lo, the monster blackout was born. Data center security and black sky hazards, <i>A.R.E. Taylor</i>	169
Shortage of engineers, <i>P. Wedderburn-Ogilvy</i>	182
Parents and education and schools, <i>P. Inson</i>	190
(SB) Ultrasonic heating, <i>A. Bakhtiari, T.M. Berberashvili and P.J. Kervalishvili</i>	203
(W) Handling, not managing, others, <i>S.A. Kadir</i>	210

Vol. 14

№ 1, March 2018

Editorial: Sovereign money	3
The photopause of the Sun, <i>W.P. Holland</i>	8
Über Nutzen und Nachteil von (digitalen) Bildtechnologien in zeitgenössischer naturwissenschaftlicher Fachliteratur, <i>J.J. Ramsden</i>	26
Ecological synthesis of CuO nanoparticles, <i>A. Sharma, G. Anand and A. Singla</i>	38
(B) The Five Horsemen of the Modern World by D. CALLAHAN	44
(W) Selling, <i>P. Wedderburn-Ogilvy</i>	48

№ 2, July 2018

Editorial: Taste	65
Responding after a big nuclear accident, <i>P. Thomas</i>	69
Multiscale physiological systems, <i>R. Summers</i>	80
The role of systems thinking in modern society, <i>J.J. Ramsden</i>	90
Effects of milling time on the microstructures of sintered Fe-16Cr-4Al-0.4Y ₂ O ₃ ODS ferritic steel, <i>E.A. Basuki, F. Ramaputra, N.A. Rabbani, S. Ardiansyah, A.M. Khan, A. Korda, F. Muhammad and D.H. Prajitno</i>	99
Which future transportation mode would you bet on? Part 1: Air, <i>T. Marshallsay</i>	109
(B) The Fourth Education Revolution: Will Artificial Intelligence Liberate or Infantilise Humanity? by A. SELDON	120
(W) The absurdity of inter-belief conflict, <i>P. Wedderburn-Ogilvy</i>	126
(W) Planning for the unexpected, <i>S.A. Kadir</i>	133

№ 3, November 2018

Editorial: Cherry picking	149
Climate change: There are some positive trends but we must accelerate progress, <i>N. Hirst</i>	153
Nanotechnology and sustainability, <i>J.J. Ramsden, A.A. Mamali, A.G. Mamalis and N.T. Athanassoulis</i>	159
Structure and properties of nanostructured ZrN coatings obtained by vacuum-arc evaporation using RF discharge, <i>A. Taran, I. Garkusha, V. Taran, R. Muratov, V. Starikov, A. Baturin, T. Skoblo, S. Romaniuk and A.G. Mamalis</i>	167
Which future transportation mode would you bet on? Part 2: Land, <i>T. Marshallsay</i>	179
(B) Weapons of Math Destruction by CATHY O'NEIL	199

Vol. 15

№ 1, March 2019

Editorial: The meaning of digitization	5
Nanostructured ZrO ₂ ceramic PVD coatings on Nd-Fe-B permanent magnets, <i>A. Taran, I. Garkusha, V. Taran, A. Timoshenko, I. Misiruk, V. Starikov, A. Baturin, T. Skoblo, S. Romaniuk and A.G. Mamalis</i>	13
Economic security of the southern Caucasus: opportunities and challenges, <i>A.G. Tvalchrelidze and P.J. Kervalishvili</i>	21

Electroerosion dispersion, sorption and coagulation for complex water purification: Electroerosion waste recycling and manufacturing of metal, oxide and alloy nanopowders, <i>M. Monastyrov, T. Prikhna, B. Halbedel, G. Kochetov, F.D.S. Marquis, A.G. Mamalis and O. Prysiazhna</i>	48
Facile one-pot hydrothermal synthesis of nanorice-like TiO ₂ for an efficient dye-sensitized solar cell (DSSC), <i>D. Kumar, A. Bist, P. Dua, P. Kuchhal, G. Anand and K.P.S. Parmar</i>	58
Synthesis and characterization of CaCO ₃ /CaO from chicken eggshell with various calcination times, <i>Poppy Puspitasari, Herin Fikri Naufal Zhorifah, Heru Suryanto, Avita Ayu Permanasari and Rara Warih Gayatri</i>	65
Which future transportation mode would you bet on? Part 3: Water, <i>T. Marshallsay</i>	72
(W) <i>Homo sapiens</i> —an endangered species?, <i>P. Wedderburn-Ogilvy</i>	93

№ 2, July 2019

Editorial: The language of deceit	115
Structure, tribological behaviour and photocatalytic activity of ARC-PVD TiO ₂ coatings obtained with a modified curvilinear magnetic filter, <i>A.V. Taran, I.E. Garkusha, V.S. Taran, A.I. Timoshenko, I.A. Misiruk, M.A. Sergiets, T.S. Skoblo, S.P. Romaniuk, T.V. Maltsev, V.V. Starikov, A.A. Baturin and A.G. Mamalis</i>	121
The efficiency of hard machining processes, <i>János Kundrák, Athanasios G. Mamalis and Viktor Molnár</i>	131
Physicochemical characterization of the inclusion compounds of eugenol and β-caryophyllene in β-cyclodextrin, <i>Shilpa Sharma, Anuradha Bhagat, G.S. Vishwakarma and Sunil Mittal</i>	143
Production cross-section of ⁵³ Mn via different reaction channels, <i>Navita Kanyal, Bhawna Pandey, Jyoti Pandey, P.V. Subhash, S. Vala, Rajnikant Makwana, S.V. Suryanarayana and G.C. Joshi</i>	150
Shape- and dimension-dependent study of volume thermal expansion of nanomaterials, <i>Himanshi and Deepika P. Joshi</i>	162
Effect of CNT doping on optical properties of Cu ₅ Se ₇₅ Ge ₁₀ In ₁₀ glassy alloys, <i>Surabhi Mishra, Priyanka Jaiswal, Pravin Kumar Singh, Pooja Lohia and D.K. Dwivedi</i>	168
Comparing the thermal performance of ancient buildings and modern-style housing constructed from local and modern construction materials, <i>R.K. Pandit, M.K. Gaur, Anand Kushwah and Pushpendra Singh</i>	174
Flexible planar asymmetric supercapacitor using synthesized few-layer graphene and activated carbon from biomass for wearable energy storage, <i>Ankit Singh, Kaushik Ghosh, Sushil Kumar, Ashwini K. Agarwal, Manjeet Jassal, Pranab Goswami and Harsh Chaturvedi</i>	183
Comparative thermal analysis of an advanced ceramic-coated piston in a spark ignition engine, <i>Jai Kumar Sharma and Ritu Raj</i>	189

№ 3, November 2019

Foreword	211
Development of a two degrees-of-freedom linear oscillatory actuator for vibration control, <i>Fumiya Kitayama and Ryou Kondo</i>	212
Development of traveling wave propulsion mechanism with a permanent magnet vibration motor, <i>Kentaro Kasuga, Iwanori Murakami, Masaki Ono and Yoshinori Ando</i>	220
Design of high-speed interior permanent magnet-type motor for turbo machinery, <i>Yohji Okada, Fumiya Kitayama and Ryou Kondo</i>	227
Syntheses of Ti-Al-Si-B-C nanocomposites by mechanical alloying and explosive compaction, <i>M. Chikhradze, F.D.S. Marquis, N. Chikhradze, G. Abashidze, A. Gigineishvili and T. Bzhalava</i>	238
Obtaining ultrafine powders of some boron carbide-based nanocomposites using liquid precursors, <i>N. Barbakadze, K. Sarajishvili, R. Chedia, L. Chkhartishvili, O. Tsagareishvili, A. Mikeladze, M. Darchiashvili and V. Ugrehelidze</i>	243
Preparation and relative mechanical strength of erbium monoselenide films, <i>Z. Jabua, A. Gigineishvili, K. Davitadze, T. Minashvili and G. Iluridze</i>	257

Vol. 16

№ 1, March 2020

Editorial: COVID-19	5
J-value assessment of how best to combat COVID-19, <i>P. Thomas</i>	16
Transport characteristics of a transport device composed of two magnetically-driven systems using a temperature-sensitive magnetic fluid, <i>Y. Ido, Y. Iwamoto, G. Ichinose and K. Odai</i>	41

Estimation of parameters for a model of polycrystalline solar cells, <i>J. Shainidze, L. Kalandadze, O. Nakashidze and N. Gomidze</i>	52
Influence of plasma-based ion implantation and deposition on the structure, internal stress and mechanical properties of nanocrystalline ZrN coatings, <i>A. Taran, I. Garkusha, V. Taran, R. Muratov, V. Starikov, A. Baturin, S. Romaniuk and A.G. Mamalis</i>	56
(SB) The Cosmos and WIMPs, <i>G.C. Holt</i>	64
(W) Small screens, reading and literacy: examinations and our expectations of young people, <i>P. Inson</i>	71

№ 2, July 2020

Editorial: Taxation and economic recovery	95
The length and severity of the coronavirus recession estimated from the dynamics of relaxing lockdown, <i>P. Thomas</i>	100
The options for the UK leaving the coronavirus lockdown of 2020, <i>P. Thomas</i>	130
The circular economy and intelligent decentralization, nanotechnologies and materials, minerals and mining, <i>W.R. Stahel</i>	151
Nanomechanical and I–V characterization of a conductive coating on an HPHT diamond substrate, <i>O. Lysenko, V. Grushko, A. Mamalis, S. Nahirniak, L. Romanko, A. Kiriev, V. Lendel, E. Mitskevich and V. Lysakovskiy</i>	169
Preparation and characterization of a novel biological nanosilver fluoride synthesized using green tea extract, <i>Z. Al-Nerabieah, E.A. Arrag and A. Rajab</i>	180
Structure and pinning centres in MgB ₂ bulk, wires and thin films and in MT-YBCO, <i>T. Prikhna, A. Mamalis, V. Romaka, M. Eisterer, J. Rabier, A. Jouline, V. Moshchil, S. Ponomaryov, M. Rindfleisch, M. Tomsic, X. Chaud, A. Shapovalov, A. Kozyrev, A. Shaternik, E. Prisyazhnaya and Ch. Yang</i>	187
Impact of thin nanoengineered coatings on the stress–strain state of cylindrical cladding made from Zr-based alloys for nuclear fuel elements, <i>Yu. V. Romashov, E. V. Povolotskii and A. G. Mamalis</i>	202
Investigation of thermal insulation for static cryostats of HTSC devices, <i>L.I. Chubraeva and S.S. Timofeyev</i>	209
Electrodynamic levitation effect in vertical HTSC electrical machines with axial magnetic flux, <i>L.I. Chubraeva, S.S. Timofeyev and V.A. Lazerko</i>	215
Electrical consolidation under pressure for Al ₂ O ₃ and WC nanodisperse powders, <i>E.S. Gevorkyan, A.G. Mamalis and Yu. G. Gutsalenko</i>	221
(MA) On the immunization criterion for Covid-19, <i>J.J. Ramsden</i>	228

№ 3, November 2020

Editorial: Reflexions on lockdown	245
Explosive metalworking technologies: A modern advanced industrial technology, <i>A. Szalay, A.G. Mamalis and I. Zádor</i>	254
Electrophysical and mechanical properties of SnO ₂ –Sb ₂ O ₃ –C ceramic-based composite material, <i>S.S. Dobromyslov, V.I. Kirko and V.A. Razumovskaya</i>	261
Measuring and controlling the Covid-19 pandemic, <i>Philip Thomas</i>	267
Chemical recycling: Helping to provide a better recycling future for consumers, <i>Bronwen Jameson</i>	331
Decoration of photocatalytic TiO ₂ particles by cobalt clusters, <i>M. Nadareishvili, G. Mamniashvili, T. Gegechkori, S. Gogichashvili, T. Zedginidze, T. Petriashvili, A. Shengelaya, D. Daraselia, D. Japaridze, E. Chikvaidze, T. Gogoladze, C.V. Ramana and J.J. Ramsden</i>	336

Vol. 17

№ 1, March 2021

Editorial: The future of quantum computing	5
Resource-efficient ferritization treatment for concentrated wastewater from electroplating production with aftertreatment by nanosorbents, <i>G. Kochetov, T. Prikhna, D. Samchenko, O. Prisyazhna, M. Monastyrkov, V. Moshchil and A. Mamalis</i>	9
Cybersecurity challenges in ensuring patient safety in global digital healthcare, <i>Sonali Manghani</i>	19
D-orbital nano oxide catalysts for indoor air purification, <i>Y. Huang, T. Xiao, P.P. Edwards, C. Cao, J.E. Brathwaite and F. Cao</i>	23
Vaccine-mediated exit strategies from England's Covid-19 lockdown, <i>Philip Thomas</i>	30
Enhanced operability of nuclear fuel rod cylindrical cladding made with thin protective nanoengineered coatings, <i>A.G. Mamalis and Yu. V. Romashov</i>	74
(W) Parents: Our expectations, <i>Peter Inson</i>	82

№ 2, July 2021

Editorial: A vision of the future	109
Decoupling plastic waste from growth: The role of design in removing blockages to the circular economy, <i>Edward Kosior and Jon Mitchell</i>	116
Performance analysis of an efficient Physically Unclonable Function architecture using CNTFET technology, <i>N. Mathan, M. Anuhy, B. Keerthi, K. Ramachandran and F.K.A. Hamid</i>	126
Nanotechnology: Roles in diagnosis and treatment of Covid-19, <i>Venus Borgohain and Vinay Kumar</i>	134
(SB) Spectroscopy—a technology looking for applications, <i>S. Rafi Ahmad</i>	141
(W) Discipline in schools, <i>Peter Inson</i>	155

№ 3, November 2021

Advanced manufacturing of advanced materials from macro- to nanoscale under static to shock loading: Principles and sustainable industrial applications, <i>Athanasios G. Mamalis</i>	183
Influence of the size, shape and concentration of magnetic particles on the optical properties of nano nickel films, <i>Lali Kalandadze, Omar Nakashidze, Nugzar Gomidze and Izolda Jabnidze</i>	197
Why the most risk-averse take the biggest risks: a quantitative reanalysis of Atkinson’s and Litwin’s “hoop-the-peg” experiments. Part 1: Simulation and model validation, <i>Philip Thomas</i>	204
Why the most risk-averse take the biggest risks: a quantitative reanalysis of Atkinson’s and Litwin’s “hoop-the-peg” experiments. Part 2: Establishing the raw data, <i>Philip Thomas</i>	229
High-energy thermal study of the high-entropy silver–copper alloy system using the PBIN database and Thermo-Calc software package, <i>W.U. Shah, D.F. Khan, J.S. Shah, H.Q. Yin and A.G. Mamalis</i>	251

Vol. 18

№ 1, March 2022

A brief history of light, <i>S.R. Ahmad</i>	5
Nanotechnology in Mexico: A conceptual evolution map, <i>C. Aguado-Cortes and V.M. Castaño</i>	16
Field emission study of nanocrystalline diamond films using STM, <i>R. Sharma, V. Kumar, V. Chatterjee, N. Woehrl and V. Buck</i>	36
<i>In-vitro</i> investigations of baclofen-loaded PLGA nanoparticles, <i>K. Nigam, Md Nematullah, F. Khan, R. Gabrani and S. Dang</i>	46
Development of a nanoemulsion loaded with naringenin, <i>A. Kaur and S. Dang</i>	53
Performance analysis of a MEMS cantilever beam, <i>T. Gomathi and M. Shaby</i>	64
Machinery secures human domination, <i>J.J. Ramsden</i>	70

№ 2, July 2022

Modeling the epidemic of the Covid-19 omicron variant in England, <i>P. Thomas</i>	89
World economy after the COVID-19 pandemic: Opportunities and challenges, <i>A.G. Tvalchrelidze</i>	116
Development of expert system for the process of high-speed diamond grinding of superhard materials based on macro- and microscale 3D models, <i>A.G. Mamalis, V.A. Fedorovich, D.V. Romashov and Y.V. Ostroverkh</i>	138
Biosynthesis and characterization of selenium nanoparticles using rind of watermelon (<i>Citrullus lanatus</i>), <i>N. Jha, S. Johri, S. Shrivastava, P. Gupta and K. Yadav</i>	153

№ 3, November 2022

Predicting the efficiency of high-speed diamond grinding of superhard materials using 3D models of macro- and micro-levels, <i>A.G. Mamalis, A.I. Grabchenko, V.A. Fedorovich, D.V. Romashov Y.V. Ostroverkh</i>	185
Beautiful minds, <i>S. Michailidis and P. Kervalishvili</i>	202
Responsible use of nanofertilizers and nanocarriers in agriculture, <i>A. Hussain and S. Malpotra</i>	211
(MA) Motorway electrification—a commentary, <i>H. Matthews</i>	224
(W) Strengthening biosecurity and biosafety systems is an urgent need for continuing human existence <i>Z. Klestova</i>	230