KEYNOTE FORUM | **DAY 1** *JOURNAL OF EARTH SCIENCE & CLIMATIC CHANGE, 2019 VOLUME 10 | DOI: 10.4172/2157-7617-C1-055*

Renewable carbon: An active path to improve global carbon footprint: Advanced carbon materials

Emission reduction is not an option but a necessity for human existence. Last 5 decades are dominated by the materials innovation and their rapid commercialization without a properly regulated accounting for human and environmental damages. With recent breakthroughs in discovering new attributes of biological and renewable materials there is a new trend to shape up our future with a much safer and business friendly advanced materials. Organic carbon is abundant in nature. When latest discoveries in graphene and graphitic carbon materials opened a new domain of advanced materials, resourcing this carbon from abundant natural residues making a significant roadway for their broader usage in a wide span of sectors ranging from transportation to construction to biomedicals and electronics. This paper will highlight the global availability of renewable carbon and their functional application by combining with the highly controversial greenhouse gas (CO_2) to obtain materials that could potentially replace construction materials such as steel and concrete, transportation industry's requirement of greener energy and lighter body and biocompatible devices and drug delivery systems.

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Biography

Mohini M Sain is the founding director of the Centre for Biocomposites and Biomaterials Processing at University of Toronto: A highly cited author on advanced renewables materials and CO_2 derived materials.

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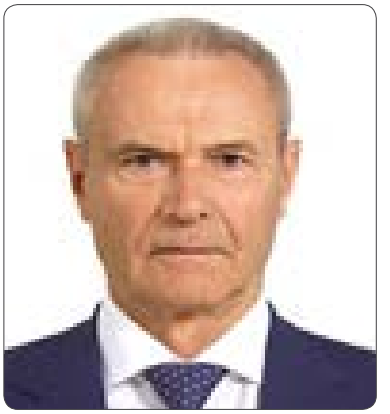
New mechanics - mathematical methods in environment

A new mathematical method created in Russia, that has a mechanical basis and is called the method of the block element, is presented in this report. Its elaboration demanded to include areas of mathematics of high level: topology, external analysis, factorization methods, integral geometry, automorphisms and other areas of mathematics. The numerical-analytical method is created to explore and solve any spatial boundary problems for systems of differential equations in partial derivatives, linear and nonlinear. Its difference from the finite and boundary element methods consists in the absence of any discretization. It solves precisely all boundary problems which are solved precisely by other methods, for example, separation of variables. Among advantages of the method are mechanical characteristics detected in the process of solving problems, tension and displacement and not density on the boundaries of domains of boundary problems, lack of necessity of diagonalization of operators of the system of differential equations, opportunity to use numerous works of scientists-mechanics in areas of differential and integral equations on some stages of applying the method. The method allows carrying out an investigation in a conversational mode, that allows detecting regularities connected with characteristics of the solution and its characteristics. There are also particular difficulties in applying the method of the block element, which is caused in the first place by the requirement of quite a high level of knowledge of mathematics used by its application. The results of applying this mechanics-mathematical approach to different boundary problems which were not studied before have been gotten. These are problems of the strength theory, materials science, seismology, climatology, nanomaterials. Problems of seismology are connected with a mechanical harbinger of seismicity based on the estimate of the concentration of strains on tectonic faults.



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Biography

Vladimir Babeshko has completed his HD (Doctor of Mechanics) in 1974 from Russian Academy of Sciences. During many years he is a chief of Scientific-Research Center for Forecasting and Preventing Geoecological and Technologenic Disasters Kuban State University and Southern Research Center, Russian Academy of Sciences. He has 20 patents, published 7 monographs and more than 450 papers in reputed journals such as Russian Academy of Sciences and many others.

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Vulnerable: The quantum of local government infrastructure exposed to sea level rise

Local government New Zealand (LGNZ) released a report on 31 January 2019 measuring the replacement value of local government-owned infrastructure exposed to sea level rise. The report details the type, quantity and replacement value of assets at intervals of MHWS+0.5, 1, 1.5 and 3.0meters using LiDAR and DEM analysis. Data is drawn from a survey of 62 of New Zealand's coastal councils, with a 97 percent response rate. This is the first time that a coordinated national analysis - exclusive to local government-owned infrastructure exposed to the effects of sea level rise- has been performed. LGNZ's study finds that the greatest amount of vulnerability is in three glasses of water infrastructure (storm, sanitary and drinking) followed by roading and buildings/facilities. In total, more than$14billion of local government-owned assets are exposed at a 3.0meter increment of sea level rise.LGNZ will use the empirical evidence gathered to create greater clarity about the quantity, cost and location of local government infrastructure to premise discussions with central government, businesses and private property owners about how to address impending impacts. Additionally, LGNZ intends to assist councils to fill identified knowledge gaps and set in place a process and procedure for future analysis to deliver greater precision in long- term adaptive asset and investment planning. Importantly, LGNZ's report outlines a number of recommendations for stakeholders to better align with each other to ensure long-term resilience of essential infrastructure. At its core, this analysis is about turning a challenge into an opportunity.

Biography

Thomas Simonson moved to from the US to New Zealand in August 2014 to joint LGNZ as a Principal Advisor. He and has been a portfolio manager and advocate in the areas of climate change, housing, roading and transport and local government funding, He also has considerable experience in working in the private sector with more than a decade of experience in land planning and development and five years as a consultant to the US federal government in land and environmental planning. Tom has Masters degrees from California Polytechnic State University – San Luis Obispo in City and Regional Planning and the London School of Economics in International Housing.

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