



# ***Introducing Canada-India Research Center of Excellence: IC-IMPACTS, and its Work in Bio-Inspired Cellulose Reinforced Concrete***

**Nemkumar Banthia**, Professor, Distinguished University Scholar and Senior Canada Research Chair in Infrastructure Rehabilitation and Sustainability, University of British Columbia



IC-IMPACTS (the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability) is the first, and only, Canada-India Research Centre of Excellence established through the Canadian Networks of Centres of Excellence (NCE).



IC-IMPACTS brings together researchers, industry innovators, community leaders, government agencies, and community organizations from across India and Canada, to work together to find solutions to poor water quality, unsafe and unsustainable infrastructure, and poor health from water-borne and infectious diseases.



This presentation will give an overview of IC-IMPACTS and highlight some of our projects including the one on cellulose reinforced concrete. Durability of our aging infrastructure remains a major concern. The presentation will describe the development of Surface Exalted Cellulose fibers that provide internal curing in concrete, initiate self-healing, reduce diffusion of deleterious species and control the corrosion of rebar. This study investigated the effect of various degree of cellulose pulp refinement on fiber morphology, fiber water retention/desorption and fresh and hardened engineering/durability properties of concrete. 3-D Dual Scan Computer Tomography (CT) was also used to provide further insights into pore refinement due to CF addition. Some applications of these Surface Exalted Cellulose fibers in concrete structures will be described.



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