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# Study on carbonation mechanism of silicate minerals

by

**Prof Chang Jun** Dalian University of Technology

Host: Dr Du Hongjian Department of Civil and Environmental Engineering

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## Abstract

Accelerated carbonation is expected to be a potential technique for sustainable development of cement-based materials, where the strength is significantly increased in several hours and greenhouse gas CO2 is stored permanently. The crystal growth of calcite during the carbonation of silicate phase plays a diagenetic role in denser structure of the system, and the system eventually forms a dense structure similar to that of natural rock. Therefore, the growth of calcite crystal plays a decisive role in the strength development of carbonated products. In the process of carbonation, the density, microstructure and etc. of clinker minerals and hydration products evolution gradually. The carbonation reaction rate, degree, reaction heat, density, volume and product evolution of each mineral were found. Different silicate clinker minerals and hydration products have different carbonation properties, that is very important for the preparation of building materials by carbonation technology.



## Speaker's Biography



Jun Chang is a professor of Dalian University of Technology, mainly engaged in research on special cement and concrete, solid waste as resources of building materials and magnesium cementitious materials. He has published over a hundred papers in world top rank academic journals and obtained more than 40 authorized invention and 10 utility models patents in the above field of study. He has won 9 national and provincial science and technology awards, including the second prize of National Technology Invention, the first prize of National Building Materials Industry Science and Technology Progress, the first prize of Shandong Province Science and Technology Progress, and the first prize of Shandong Province Technology Invention. He is the winner of Shandong Youth Science and Technology Award, named as a Leading Talent of Dalian city since 2020 and was selected into the New Century

Outstanding Talents Support Program of Chinese Ministry of Education in 2010. He is currently undertaking multiple technical positions in Chinese Silicate Society, including the director of Cement Branch, director of Concrete and Cement Products Branch, and executive Director of Solid Waste Branch. And he is also the Vice Chairman of Education and Human Resources Committee of China Concrete and Cement Products Association (CCPA).

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### Map of Seminar Room E5-03-19. 4 Engineering Drive 4, Singapore 117585