NOVEL HYBRID FRP TUBULAR STANDING ROOF SUPPORTS FOR LONGWALL MINING

ABSTRACT
Maintaining strata stability in underground gate roads is critical to the success of underground coal mining, both in terms of mine safety and productivity. This presentation first introduces a novel form of hybrid FRP tubular structural members, which was originally devised for civil infrastructure, for application in underground mining as standing roof supports. The superior performance of the novel hybrid members in comparison with traditional filling/support structures in underground mines is then discussed based on the results from a recent experimental study. This presentation also discusses possible mining applications of the novel hybrid structural members (e.g. for various types of roadway in longwall mining, goaf-side entry retaining, bleeder road, roadway intersection corners, cut-throughs).

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Dr. Tao Yu is a Senior Lecturer at the University of Wollongong (UOW) in Australia, and an Associate Editor of the international journal Advances in Structural Engineering. His research interests include hybrid FRP tubular structures, rehabilitation of existing concrete and steel structures and nonlinear finite element modeling of structural behavior. Dr. Yu has published over 70 research papers in the area of structural engineering, and many of his journal publications are among the “Most Cited Articles”, “Top 25 Hottest Articles”, or “Top Downloads” of the respective journals. Dr. Yu has successfully secured a number of research projects, including the “Discovery Early Career Researcher Award” from the Australian Research Council. He is also one of the main contributors for the Chinese national standard “Technical Code for Infrastructure Application of FRP Composites (GB50608-2010)” and the Hong Kong design guideline “Guide for the Strengthening of Concrete Structures using FRP Composites".