



1ST KEYNOTE LECTURE : 9:00 AM – 9:40 AM JUNE 7, 2016



Assessment of asphalt mixture cracking performance



Reynaldo (Rey) ROQUE is full Professor in the Department of Civil and Coastal Engineering at the University of Florida (USA). His research has focused on understanding fundamental mechanisms that control behavior and durability of asphalt materials and pavement systems. His work has been widely published and recognized by leading journals in his field. He has served as Chair and was recently elected Emeritus Member of TRB committee on *Characteristics of Bituminous Mixtures to Meet Structural Requirements*. He has served as Editor-in-Chief of the International Journal *Road Materials and Pavement Design* (RMPD). He is also a Past-President of the Association of Asphalt Paving Technologists (AAPT).

ABSTRACT

Assessment of mixture cracking performance and development of mixture design guidelines for optimization continue to be among the most important challenges facing the asphalt pavement community. Although there is general agreement that mixture testing is needed for reliable assessment and quality control, questions remain as to the minimum number of properties and conditions required and what tests and conditioning procedures are best suited to obtain them. Mechanisms of damage and cracking will be examined along with known trends in mixture property changes to illustrate how performance of tests, regardless of how sophisticated, at a single state (e.g. after oxidative aging) is insufficient to properly assess mixture cracking performance. Rather, the most important factor for proper assessment may be determination of how mixture fracture tolerance and resistance to damage, which are not necessarily correlated, change relative to each other during the service life of a pavement. In addition, current understanding of how distribution of aggregate particles, air voids and binder, which can be controlled by use of proper mixture design guidelines, affect the magnitude as well as the changes in mixture fracture tolerance and resistance to damage. Conclusions will be presented regarding what must be determined to effectively assess mixture cracking performance.

