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Preface

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This is the second part of the issue on infrastructure to report the current advancements in the science related to design and construction, and renewal of aging infrastructure. The aim is to try, test, and modify if necessary, the prevailing paradigms and report significant fundamental and applied research, thereby providing guidelines related to the planning, design, construction and maintenance of facilities. Three important infrastructure materials have been identified and they are soil, asphalt and concrete. The main aim is to focus attention on these materials under broad groupings of material modeling, experimental methods and numerical procedures.

There are two articles in this part of the issue. In the first, K. R. Rajagopal outlines a fundamental framework for modeling the response of geological materials. He uses the Helmholtz potential based on the deformation gradient and the rate of entropy production, and the Gibbs potential based on stress and the rate of entropy production to develop a rich variety of constitutive models for geological materials. In the second article, Abu Al-Rub and co-workers present a computational model for capturing the response of asphalt mixtures considering the diverse response of the individual constituents.

We express our deep appreciation to all the contributing authors in both issues for communicating some of the finest articles on infrastructure.

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