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Editorial

Sustainable Pavement Materials and Technology

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1. Contents of the Special Issue

In recent years, the pavement materials and technology community has focused most of its research efforts to minimize the environmental impact of the materials and procedures involved in pavement design, construction, maintenance and rehabilitation. In that process, several new materials and techniques have been developed. This Special Issue serves as a forum to manifest some original approaches to reduce the environmental impact of pavement materials.

The use of recycled materials is one of the main approaches to reduce the environmental impact of pavement materials. Three of the six papers published in this Special Issue refer directly to this topic. Crisman et al. [1] explored the influence of crumb rubber in asphalt mixtures on recycled steel slag mechanical performance, finding that crumb rubber increased the stiffness of these mixtures at high temperatures, while reducing it at lower ones. Radević et al. [2] analyzed the impact of recycled concrete aggregates on the mechanical performance of asphalt mixtures, concluding that 45% of recycled concrete aggregate can be used without substantially reducing the performance of the mixture. Finally, Al-Saffar et al. [3] carried out review research on the use of a rejuvenator on recycled asphalt mixtures and analyzed the influence of different rejuvenators on the durability of the recycled mixtures.

Improving the durability of pavement materials is another approach to reduce their environmental impact. Two works presented in this Issue focused on permeable pavement durability and sustainability, taking two different approaches. Chai et al. [4] analyzed how freeze-thaw cycles affect the durability of permeable pavements and discovered an air void high limit of 21% for porous asphalt in freezing regions. Quite different was the approach adopted by Sprouse III et al. [5] They proposed changes in the nomenclature and standards for pervious pavements and developed a ten-part holistic green design framework for these types of pavements, which should drastically improve their durability.

The valorization of waste materials from other industries to elaborate pavement materials is another way of improving their sustainability. Movilla-Quesada et al. [6] explored this in their work, using cellulose ash as an adhesive and moisture sensibility enhancing additive. They studied different dosages of this waste material to determine which would be the right proportion of this additive to improve the moisture sensibility of asphalt mixtures.

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