



**Università
degli Studi
di Palermo**

CENTRO DI STUDI AVANZATI "A.S.CENT."

CENTRE OF ADVANCED STUDIES "A.S.CENT."

The Director: Prof. Avv. Antonello MIRANDA

Full prof. of Comparative and European Law



To kind attention of Prof. **ANTONELLO MIRANDA**
Director of A.S.CENT. – Centre of Advanced Studies

University of Palermo

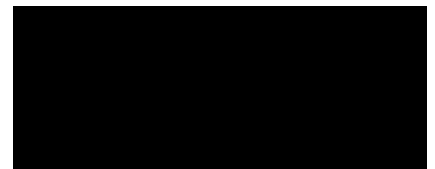
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FINAL REPORT

During my A.S.CENT Visiting Fellowship at the University of Palermo, I undertook collaborative research on **sustainable and intelligent technologies for future roadway infrastructure**, building on the proposed collaboration between SMARTiLab and the Nottingham Transportation Engineering Centre (NTEC). The fellowship provided an excellent platform to exchange expertise in pavement engineering, sustainability, digitalisation and data-driven road infrastructure management.

A principal research activity was the development of a joint paper on the recyclability of alternative pavement materials. The work examined how the chemistry and rheological behaviour of materials relate to the mechanical performance and future recyclability of mixtures containing alternative paving materials. This contributed to a more integrated assessment of material circularity and the capacity of sustainable asphalt technologies to undergo multiple recycling cycles. I also held technical discussions with PhD students and postdoctoral researchers associated with A.S.CENT and the University of Palermo. These exchanges covered research methodologies, advanced characterisation of pavement materials, interpretation of experimental results, publication development and potential areas for future collaboration. In addition, I delivered a research seminar on **physics-informed digital twins for road pavements**, presenting how mechanistic knowledge, field and laboratory data, and digital technologies can be integrated to improve performance prediction and infrastructure decision-making.

Overall, the fellowship strengthened collaboration between the University of Palermo and the University of Nottingham, advanced joint research and publication activities, and created opportunities for future researcher exchanges and collaborative funding proposals. I am grateful to A.S.CENT and my colleagues at the University of Palermo for their hospitality, support and valuable academic engagement.



Signature: **Anand Sreeram**

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