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## Transparent display and interactive window mask for the railway industry based on graphene electrodes

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In the railway industry, the information provided to the passengers is usually limited, including only the name of the next stop and the time. Additionally, it is not easy to access that information as the displays are usually placed on top of the carriages, which cannot be seen on all seated positions. As an alternative, the displays can be installed on the back of the seats or headrests which entails extra costs, increasing maintenance, service and installation complexity as this option prevents the change of the seats pitch, which is a trend nowadays. A better way to reach all passengers would be to display the information on the window masks. However, the current technology only allows a maximum theoretical optical transmittance of 80%, preventing the passengers from looking through the window. This characteristic is due to the application of non-transparent materials on the substrate and driving circuits that drive the luminescent components, such as LEDs. To solve the above problem, we propose to develop a display stack-up construction based on chemical vapour deposition of graphene electrodes and circuits due to its electrical conductivity, flexibility and optical transmittance properties (up to 97%) combined. Additionally, a touchscreen infrared technology will be implemented on the window to interact with the passengers, allowing them to choose the type of information they want to check. This approach aims to provide a next generation transparent and touchscreen window mask solution to be produced at scale and economically viable in the future.

### Biography

Melissa Bacatelo has completed her MSc in Materials Engineering at the age of 23 years at Institute Superior Technical (Portugal), spending a semester at Chalmers University of Technology (Sweden) as an Erasmus student, where she first learned about graphene. She completed her thesis in "Recycling of lithium-ion batteries" with a 19/20 score at IN+ Center for Innovation, Technology and Policy Research, where she stayed for almost 2 years. She is currently working as a R&D Engineer at MCG to develop innovative products for the railway industry that meet the future demands of public transportation by applying new materials and processes.

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