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Icephobic and Hydrophobic Behaviour of Laser Patterned Transparent Coatings

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Abstract : The goal of the work was to reduce or completely eliminate the accumulation of dirt, snow and ice build-up on transparent coatings by achieving self-cleaning and icephobic properties. The research involved the use of laser surface texturing technology for chemically modified coatings of the epoxy materials group and their hybrids used to protect glass surfaces. For this purpose, two methods of surface structuring and the preceding volumetric modification of the chemical composition with proprietary organosilicon compounds and/or mineral additives were used. An attractive approach to the topic was the development of efficient and, most importantly, durable coatings with self-cleaning and ice-phobic properties that reduced or avoided dirt build-up and adhesion of water, snow and ice. With a view to the future industrial application of the developed technologies, all methods meet the requirements in terms of their practical use on a large scale.

Keywords : icephobic coatings, hydrophobic coatings, transparent coatings, laser patterning
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