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Bio-inspired microstructures for directional liquid transport

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The interdisciplinary field of biomimetics has been very successful in solving engineering problems by searching for solutions in nature. Through the process of evolution, many living organisms developed different structural and chemical material properties that assured the continuation of a certain species. Technological challenges dealing with wetting and liquid collection and transportation also found solutions in nature. Our main focus is on the directional transport of liquids and as a role-model for this application, we used the flat bugs (*Dysodius lunatus*). Here, we present arrays of microstructures produced by two-photon polymerization technique that mimic the micro-ornamentation from the bugs' cuticle. A good directionality of liquid transport was achieved, directly controlled by the direction of the pointed microstructures at the surface. These results could therefore be interesting for applications in friction and wear reduction.

Biography

Cristina Plamadeala has a Bachelor's and Master's degrees in Biophysics and Medical Physics from the Alexandru Ioan Cuza University, Iasi, Romania. Currently, she is enrolled in the PhD program of Johannes Kepler University Linz, Linz, Austria, under the supervision of a Dr. Johannes Heitz and Dr. Werner Baumgartner. Her scientific work is done in the framework of the European FET-OPEN project 665337 titled, "Laser-induced nanostructures as biomimetic model of fluid transport in the integument of animals (LiNaBioFluid)". The main focus of her work is to create laser-induced microstructures for potential bio-medical applications in the fields of fluid transportation and tissue engineering.

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