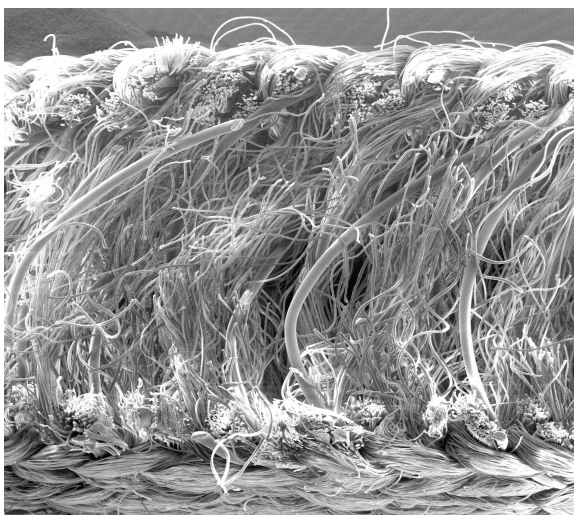




Oleo-dynamic technical innovations

As for technical surfaces, structures with the combined capability to absorb, retain and also completely release oil are still unknown. Within the scope of a project research is undertaken to transfer this functional mechanism known from nature to textile materials. The aim is to develop transport structures, which enable the charging with and discharging from oil respectively, which is free of conglutinations, as well as free of lossless transport.



Wild bees are the model for the bionic development – bees that, for instance, do not gather nectar but oil from flowers. These bees are equipped with highly specialized ‘tools’ which enable them to scrape off the oil from the flower glands. Then it is re-loaded on their back legs, with putting it into the nest. There the oil is unloaded again with the help of combs and fed to larvae mixed with pollen or applied to the walls of brood cells as impregnation. The transport structure is similar to a lightweight construction consisting of branched hairs, which form a regular 3D-grid where the oil is retained, but can also be unloaded easily by the bee. According to this model from nature, the bionic research project is targeted to realize the functions achieved in nature - by the development of suitable textile structure and surface parameters. Based on 3D-knitted fabrics and integrated special yarns a textile prototype could be designed, the geometry and functional principle of which correspond to the natural model.

Re-usable systems for the absorption of oil required in manifold way - for instance in the case of accidents and damages or auxiliary means of production at industrial manufacture - are possible fields of application.

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