

## Determination of the moisture regulation in respiratory masks and release of a guide to pick textile optimally qualified for this purpose – **MaskEffect**

Comparatively high costs plus limited availability of commercial respirator masks result in many people making or improvising masks themselves. With regard to effectiveness, there is a fundamental distinction between protecting against the spread of the SARS CoV-2 pathogen by infected persons and protecting against infection, the latter posing the greater challenge. Protective masks made from textile are currently very common. However, there is a lack of scientifically proven information about fitting textiles from everyday life. The moisture in the breathing air is a major limiting factor. Based on a state-of-the-art research, the project will combine common designs and textiles for self-built respiratory masks. Common materials are acquired and appropriate masks are designed. The masks will be worn by different people for different periods of time, after which the degree of moisture penetration will be determined and visualized. In addition, the drying process over time is documented by comparing defined pieces of textile saturated with water. Using terahertz time-domain spectroscopy, the local moisture content is derived from the dielectric behavior of the water. In addition, the local cooling in the air stream caused by evaporative cooling is used for fast imaging of the moisture distribution. While terahertz technology provides good chances for quantifying humidity, thermography will quickly provide high-resolution images of the local humidity distribution. The results of the investigations are processed and edited in such a way that they can also be understood by non-scientists allowing clear conclusions to be drawn. The result will thus be an operational guideline, which will be made available to the public via the homepage of Fraunhofer IZFP. The guideline will parallelly be promoted in relevant social channels.

