München, 17. November 2019

BA or MA Thesis or Project Work

„Colorimetric Dermal Sensors"

Background. Tattoo-based technologies present an approach to biointerfaces in which the body surface is rendered as an interactive display by patterning sensors into the skin to produce color changes in response to biomarker variations in the interstitial fluid. They have the potential to combine advances in biotechnology with traditional methods in tattoo artistry.

Project scope. The aim of this project is to develop tattoo inks with colorimetric biosensors that can report on the concentration of biomarkers in the interstitial fluid of the skin. The evaluation of these biosensors will be carried out in an *ex vivo* skin model, assessing their visibility from the dermis. This project will explore applications of tattoo sensors in the medical and lifestyle domains. This work will be a platform in which the skin reveals information inside the body, tattoos

form wearable displays within the skin, and the body's metabolism works as an input for the tattoo biosensors. This project will take place in TranslaTUM in collaboration with Prof. Oliver Hayden.

Reference: Dermal Tattoo Biosensors for Colorimetric Metabolite Detection. Angewandte Chemie 131 (31), 10616-10623 (2019)

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