Analitik Kimya

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Optical Chemical Sensors for Multimodal Determination of Biomarkers (WearSense)

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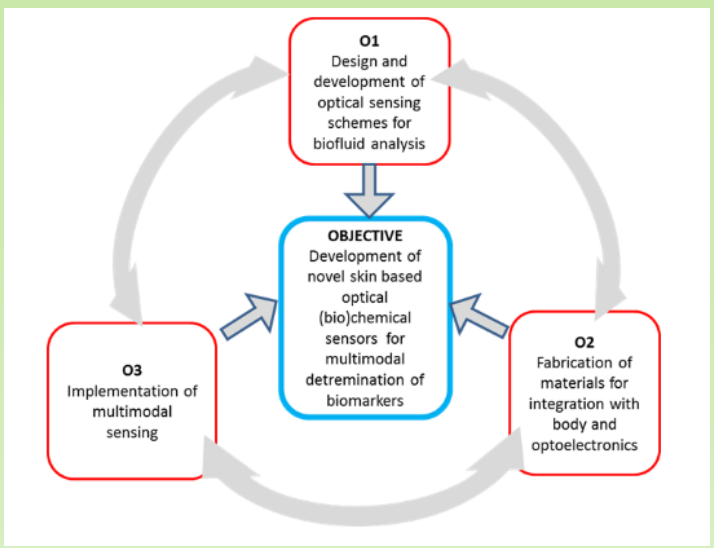
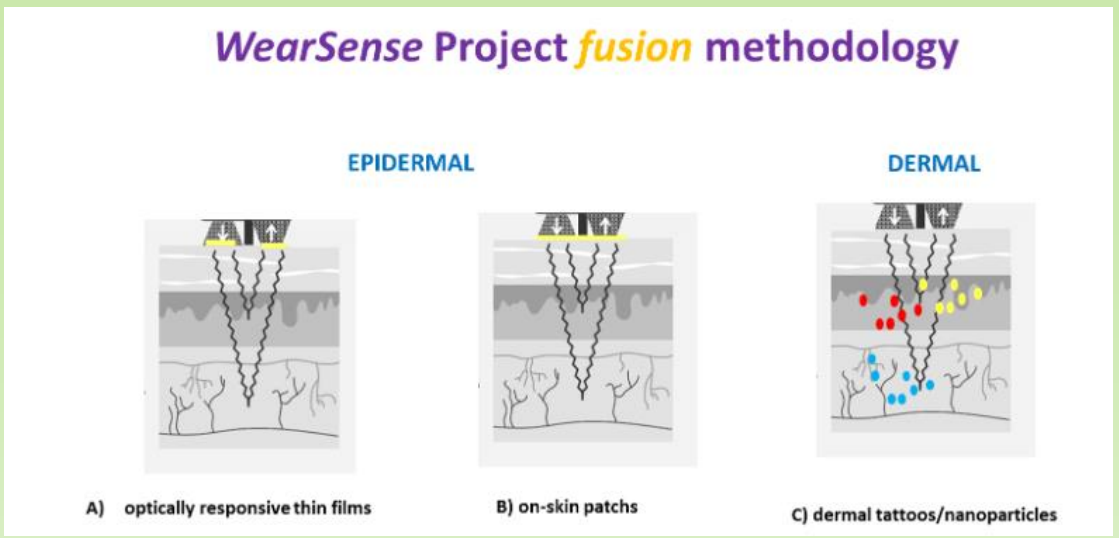
INTRODUCTION

Next-generation wearable sensors that enable continuous real-time multimodal measurement of physical parameters (heart rate, heart rate variability etc.) together with biochemical markers (such as pH, concentration of electrolyte ions, metabolites, therapeutics) would be a transformative technology for personal fitness, wellbeing and diagnostics.

In this interdisciplinary project we intend to implement multimodal biomarker determination using a single wearable optoelectronic platform integrated with optical (bio)chemical sensing capability in the form of chemically responsive skin patches or dermal tattoos

AIM of WEARSENSE PROJECT





The most common analyte group identified in wearable electrochemical sensor research is pH and ions (20/61, 33 %), with sodium ion the single most common analyte (9/61, 15 %). Glucose is next (13 %), followed by ethanol (7 %). Toxic and pollutant gases are the most frequently sensed when it comes to ambient monitoring with wearables (20 %), with SO_2, NO_2 and O_2 collectively making up the largest group (15 %). Other large molecules such as proteins and hormones are clearly of interest for wearable biomonitoring, and organophosphates in ambient monitoring.