HawkSpex® Tap
SMARTPHONE APP FOR CHEMICAL ANALYSIS OF SUBSTANCES

Fraunhofer Institute for Factory Operation and Automation IFF
Sandtorstrasse 22 | 39106 Magdeburg

Contact
Biosystems Engineering
Prof. Udo Seiffert
Phone +49 391 4090-107
Fax +49 391 4090-93-107
udo.seiffert@iff.fraunhofer.de

www.iff.fraunhofer.de/en.html
**HawkSpex® Tap: SMARTPHONE APP FOR CHEMICAL ANALYSIS OF SUBSTANCES**

**Product**

HawkSpex® Tap is a smartphone application that identifies major chemical components of liquid or creamy substances. It can be employed as a native or a web app. The imaged scan pattern can be processed locally (without an active data connection or in airplane mode) or implemented as a client/server application. It is easily integrated in existing apps. The combination of scan patterns and extracted features makes it possible to determine the chemical composition of a substance. Additional mechanical, optical or electronic components are not needed. HawkSpex® Tap is a user friendly alternative to spectral optical applications and external sensor systems.

**Technology**

The scanned substance is applied to the cleaned camera lens, leaving a thin film. The film acting as an optical filter is scanned and refracts/diffracts the scan pattern distinctly, regardless of the properties of the substance scanned. The physical principle of scanning is based on geometric textures and thus largely independent of difficult to control properties, such as ambient light. HawkSpex® Tap employs optimized scan patterns corresponding to the specific properties of the substance. Features, primarily texture, are extracted from the scanned image. They can be differentiated in terms of the diffraction caused. The extracted features are also optimized for the scan patterns employed and thus for the substances identified.

The ingenious combination of a test pattern and extracted features assures scanning performance. Suitability for specific applications is systematically validated algorithmically and numerically.

**Benefits**

- Quantitative or qualitative grading of substances, differentiation of substances or authentication of products
- No capital and operating expenditures required for optical, mechanical or electronic components
- Real-time analysis without any appreciable consumption of the sample
- Easy use by ultimate consumers, for instance, for cosmetic products or food items