

## **Abstract EFAS/DGA 2007**

### **Miniaturized dosimeter for an individualized prevention of hearing loss in the working environment and daily life**

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Introduction: At present, for prevention of hearing-loss, the usefulness of fixed and reproducible relations of psycho-physical stresses and resulting individual strains are generally underestimated. These relations are often hypothesized without prove. If proved, monitoring in the working environment and daily life is difficult.

The Concept: To support modern ergonomics, biomechatronics may provide adaptive miniaturized dosimeters. They will be used for evidence-based prevention of damage so that accumulating noise-dose effects can be avoided. The noise measuring systems presented will transform readings of the same external stresses for different individuals into a measure of individual strains. Future research on strain should concentrate on the simultaneous identification of measurements for disposition and the assessment of stresses by loading. Using the current progress in MEMS-technologies, biomechatronics enable the development of "Personalized Miniaturized Dosimeters (PMD)" for the prevention of noise-provoked damages in hearing.

The goal of the project is the development of procedures and a setup which allows precise quantification of individual stress and strain of an exposed employee. The focus is put on a miniaturized device with personalized adaption (e.g. CIC-sensor - completely in the canal) for each individual and high data resolution (e.g. wireless frontend) for precise and comprehensive determination of binaural noise exposure or strain.

