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| HNO-Klinik Abteilung Phoniatrie und Pädaudiologie  Waldstr. 1 91054 Erlangen | Hals-Nasen-Ohren-Klinik  Kopf- und Halschirurgie  **Direktor: Prof. Dr. med. Dr. h.c. H. Iro** |
| Master Thesis Molecular Medicine / Medical Engineering  Chemical and Bioengineering / Life Sciences    Measuring systems for rotational and oscillatory tests with a shear rheometer. (A) Cone-and-plate. (B) Parallel-plates. (C) Double gap. |
| Abteilung für  Phoniatrie und Pädaudiologie  Dr. med. Anne Schützenberger  Telefon: 09131 85-32782  Fax: 09131 85-32687  Phoni-sekretariat@uk-erlangen.de  Waldstr. 1, 91054 Erlangen  CICERO-Gebäude: Raumerstr. 1a  **Dr.-Ing. Marion Semmler** [marion.semmler@uk-erlangen.de](mailto:marion.semmler@uk-erlangen.de)  Telefon: 09131 85-43979 |
| **Rheological characterization of saliva samples from patients with Ectodermal Dysplasia** | |

**Background**

Patients with ectodermal dysplasia (ED) suffer from an inherited disorder in the development of the ectodermal structures. Besides the main symptoms, i.e. significantly reduced formation/expression of teeth, hair and sweat glands, a decreased saliva production is objectively demonstrated. In addition to difficulties with chewing/swallowing, ED patients frequently report on the subjective impression of rough and hoarse voices, which could be confirmed by a standardized measurement protocol for voice evaluation.

A study with 150 test subjects (ED patients & healthy controls) was conducted to investigate the influence of the reduced number and function of the mucosal and salivary glands in ED patients on the resulting voice quality. In this project, two different saliva samples (stimulated/unstimulated) serve as an indicator for the laryngeal mucus on the vocal folds. Among other measurements, a rheological characterization provides insights on the viscoelastic properties and their influence on phonation in general.

This work is supervised collaboratively by the Division of Phoniatrics and Pediatric Audiology at the University Hospital Erlangen and the Chair of Particle Technology at the Technical Faculty of the FAU.

**Requirements**

* Basic knowledge of rheological measurement technology is desirable, but not mandatory
* Independent and organized working style

**Tasks/aims**

* Preliminary tests for optimal measurements settings
* Determination of time dependent behavior in saliva samples
* Measurement of stimulated and unstimulated saliva samples from ED patients and controls
* Analysis and interpretation of results

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