



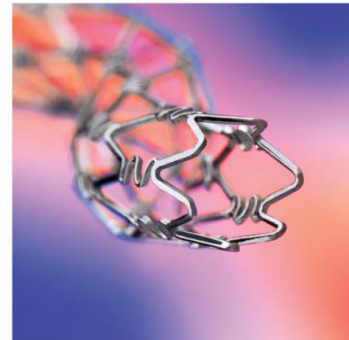
Master-Thesis

Finite Element Methode, Biomechanics

## Lifetime Analysis of Stents – Modeling and Simulation

### Goal:

The objective of this master thesis is the mechanical description and simulation of the deformation and damage mechanisms in little-crystalline Stents under monotonous and cyclic load of Stents.



### Project Description:

Stents are metallic continuous implants for the stabilization of coronary arteries. Due to the normal heart activity, stents are subjected to a cyclic load, which leads to approximately 10 million of load cycles. Depending on time of the implantation and life expectancy of the patients, Stents have to resist of about 100 to 700 million load cycles without damage. During this time both sufficient bio functionality and a good biocompatibility must assure.

### Procedure:

- literature research,
- compilation of existing models,
- familiarization of herself/himself with FEM,
- accomplishment of simulations and interpretation of the results
- documentation in LaTeX

### Prerequisites:

- tensor calculus, continuum mechanics and finite element method,
- Fortran77, C and LaTeX.

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