

# Welding technology development for polyamide catheters

## Background

This thesis is part of a cooperation project to create a new generation of heart catheters which are used to access clogged arteries and dilate them in order to restore blood flow. For the production of a coronary catheter several time-consuming welding processes are necessary. New welding processes shall be investigated within the scope of this thesis in order to render catheter production more efficient.

## Aim

Development of a quick and reliable welding process for polyamide tube materials.

## Materials and Methods

- Investigate on the current state of the art of polyamide welding techniques
- Evaluate different methods of heat transfer into welding zone and identify a suited welding method
- Optimize welding technique and test pressure resistance of weldings

## Nature of the Thesis

Analytical: 20 %

Hardware development: 30 %

Experimental testing: 40 %

Documentation: 10 %

## Requirements

Mechanical engineer, biomedical engineer or polymer chemist, hands-on mentality and motivation for experimental work.

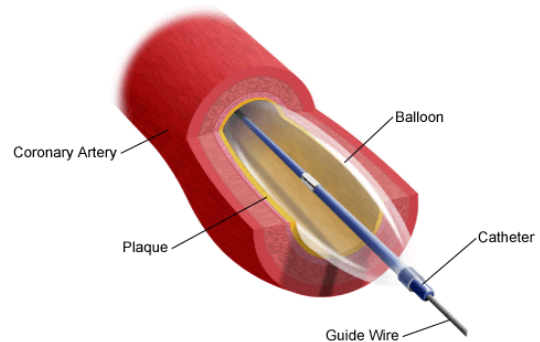
## What we provide

The student will have the opportunity to work on a unique and highly innovative project where our research group collaborates with clinicians and industry on common ground. We provide expertise in medical device development and bench testing. The candidate will work in a dynamic team, where creative and innovative work is highly appreciated. The position provides the opportunity to be involved in the development of cutting-edge cardiovascular technology.

## Contact

Please send a short CV to both project supervisors: Adrian Zurbuchen, PhD ([adrian.zurbuchen@artorg.unibe.ch](mailto:adrian.zurbuchen@artorg.unibe.ch)) and Andreas Haerberlin, MD, PhD ([andreas.haerberlin@insel.ch](mailto:andreas.haerberlin@insel.ch))

## Inflation of Balloon Inside a Coronary Artery



Balloon catheter dilating stenotic tissue

## Supervisors

Adrian Zurbuchen, PhD <sup>1</sup>

## Examiners

Adrian Zurbuchen, PhD <sup>1</sup>

Andreas Haerberlin, MD, PhD <sup>2</sup>

## Institutes

<sup>1</sup> Swiss Institute for Translational and Entrepreneurial Medicine – SITEM-Insel

<sup>2</sup> Dept. of Cardiology, Bern University Hospital