Master’s thesis
on the subject
Investigation on a blood substitute for testing gas transfer in membrane oxygenators

Background
Extracorporeal membrane oxygenation (ECMO) is becoming increasingly relevant for the treatment of respiratory insufficiencies. During the development of membrane oxygenators for ECMO based therapies, in vitro tests with animal whole blood are carried out in order to analyze the gas exchange performance. In order to make this process more efficient, a blood substitute that imitates the flow and gas transport properties of whole blood is to be developed.

In the context of this work, influences of manufacturing parameters on the rheology, capacity of oxygen transport and stability of a perfluorocarbon based blood substitute are to be examined regarding the performance of oxygen transfer in membrane oxygenators.

Our profile
At the Department of Cardiovascular Engineering at the Institute of Applied Medical Engineering, lung assist systems are being researched, developed and tested. In addition, we work on establishing new in vitro test methods that shall enable both safe and rapid development and validation of artificial lungs.

Your profile
- Interest in research in the field of Medical Engineering
- Reliable and responsible working behavior
- Enjoying experimental work

Your tasks
- Literature research on influences of manufacturing on target parameters
- Planning, preparation and performance of experimental series
- Characterization and assessment of produced test fluids
- Performance of oxygen transfer test on a commercial membrane oxygenator with obtained test fluid
- Evaluation and analysis of experimental results

If you are interested or have any questions regarding the job description, please contact us by phone or email.