

# MASTER THESIS: A DUAL CONDUCTIVITY AND TURBIDITY UNIT FOR CRYSTALLIZATION MONITORING IN A CONTINUOUS FLOW REACTOR

- In a continuous flow reactor, reactants are continuously fed into a reactor on the one end and emerge as continuous stream of product on the other end, as illustrated in Fig. 1. Adjusting parameters like pressure, temperature or flow rate allows to control the speed of reaction. Advantages of such reactors are good and easy controllability, reliable scale up, and high reproducibility. The latter qualifies them for sensitive chemical processes such as the synthesis of zeolite crystals from ionic liquid media.
- Goal of this thesis is to **design, fabricate and test a device which can measure the electrical conductivity and turbidity** in the in- and outlet stream of a continuous flow reactor. A possible realization of such a device is schematically shown in Fig. 2. The measurement unit should be temperature controlled, low-cost and designed for small sample volumes.
- Our lab at **IME** is **best equipped for practical work** (3D printers, solder stations, frequency and impedance analyzers, CNC milling machines, ...). We have a **great experience in fabricating miniature sensor devices** especially in the field of fluid property sensing applications.
- **Student requirements:**
  - Basic knowledge in programming (MATLAB, Python, Arduino), electronics and electrical circuits
  - Adept at handicraft
  - Ability to work independently and responsibly
- **Interested?** Please contact
  - Nikolaus Doppelhammer ([nikolaus.doppelhammer@jku.at](mailto:nikolaus.doppelhammer@jku.at))

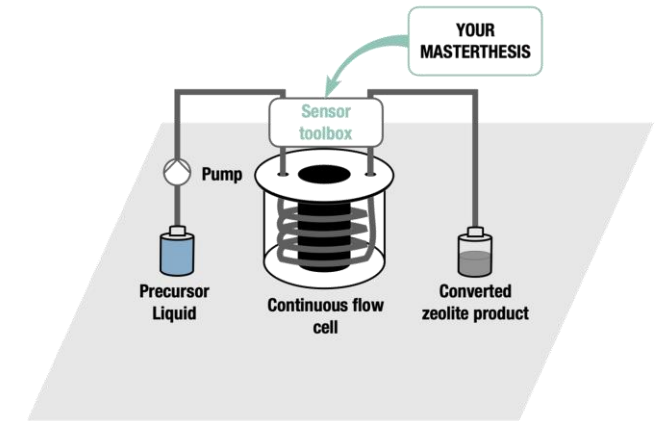


Fig. 1. Continuous flow reactor

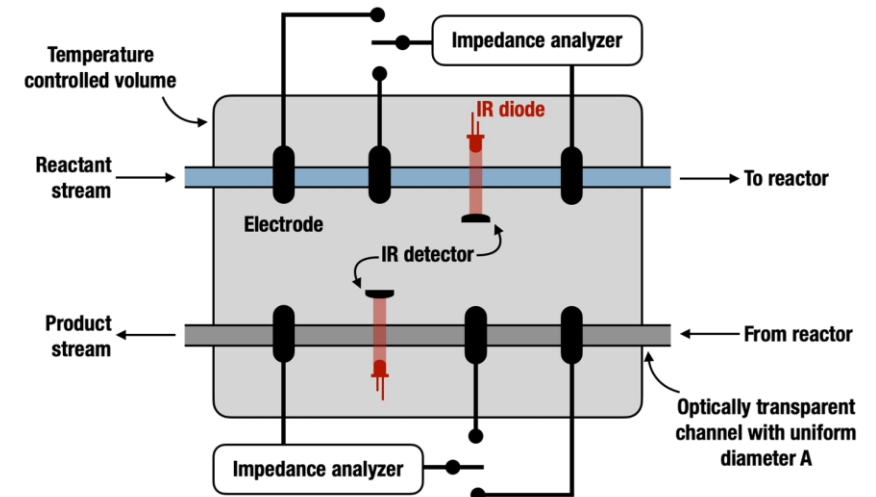


Fig. 2. Dual conductivity and turbidity measurement unit