Start- end date: **18-02-2019 till 12-07-2019**	
Student name: **Robin Taks**	
Course in the Netherlands: **Bio-based Chemistry**	
Internship Department/Company: **Universidade Federal de São João del-Rei**	
Brazilian Professor/Supervisor: **Marcelo Batista**	
Dutch Professor/Supervisor: **Michiel Michels**	
Internship	

Problem / assignment

Waste gasses from industrial acrylonitrile plants contain acrylonitrile, this product is No 1 in the list of hazardous materials presented by the Environmental Protection Agency. Therefore, it is an urgent and obligatory necessity to prevent its emission into the atmosphere. Currently these exhaust gasses are being treated with thermal combustion which generate a lot of NOx and have a high energy cost due to high operating temperatures. The assignment of this internship is to test catalytic combustion using Cu-based Zeolite catalysts for higher selectivity towards N2 and lower operating temperatures.

Used methods / project phases

- *Phase 1: Preparation of catalysts*
- *Phase 2: Activity and selectivity tests*
    - *Using a reactor coupled to a Mass Spectrometer*
- *Phase 3: Characterization of catalysts*
    - *Using X-ray diffraction crystallography, UV-VIS spectroscopy and H_2- Temperature Programmed Reduction*

Results

The catalysts showed great conversion of acrylonitrile with a high selectivity towards N_2, indicating that using the catalytic combustion has advantages over thermal combustion.

Extra info / advice / link to final document and presentation

My internship is currently still going on so I have no report to yet, I will send mine when it is finished (12 July).