

Vacuum UV process for persistent micropollutants removal

Type of project: BSc/MSc Thesis or internship

Starting date: 1st June, 2023 or later

Duration: at least 5 months

Allowance: €200 or 400 per month, subject to the personal situation

Location: Wetsus – European centre of excellence for sustainable water technology (Leeuwarden, the Netherlands)

Project description:

The presence of organic micropollutants (OMPs), such as pharmaceuticals, personal care compounds, and hormones, has emerged as a threat to human and environmental health. UV radiation-based technologies have been developed to remove OMPs from water. Especially, with the application of UV treatment at the low wavelength, 185nm as in Vacuum UV, even the most persistent micropollutants, such as PFAS, can be removed and degraded. Photons of 185nm are strongly absorbed by water, generating strong oxidants (e.g. HO·) and reductants (e.g. e_{aq}^- and H·) for the degradation of OMPs. The reaction kinetics of complex chemistry during the process are not fully understood. At Wetsus, we will combine kinetic modeling with experimental observation to better understand and utilize the VUV technology.

This project will focus on finding optimal experimental (pH, DO, time, etc.,) conditions for PFAS degradation in VUV processes using a collimated beam reactor.

Main tasks:

- Perform PFAS degradation experiments in collimated beam reactor;
- Analyze water samples using different methods.

Requirement:

- Currently enrolled as a BSc or MSc student (non-EU citizens must be enrolled at a Dutch university to be eligible for application);
- Background in chemistry engineering, environmental science or related fields;
- Good communication in English - both written and oral;
- Motivated, responsible, and organized;
- Experience with laboratory work is preferable.

How to apply:

Please send your CV (max 2 pages) and motivation letter (max 1 page) to Yicheng Wang at yicheng.wang@wetsus.nl.

Please do not hesitate to contact if you have any further questions regarding this project.

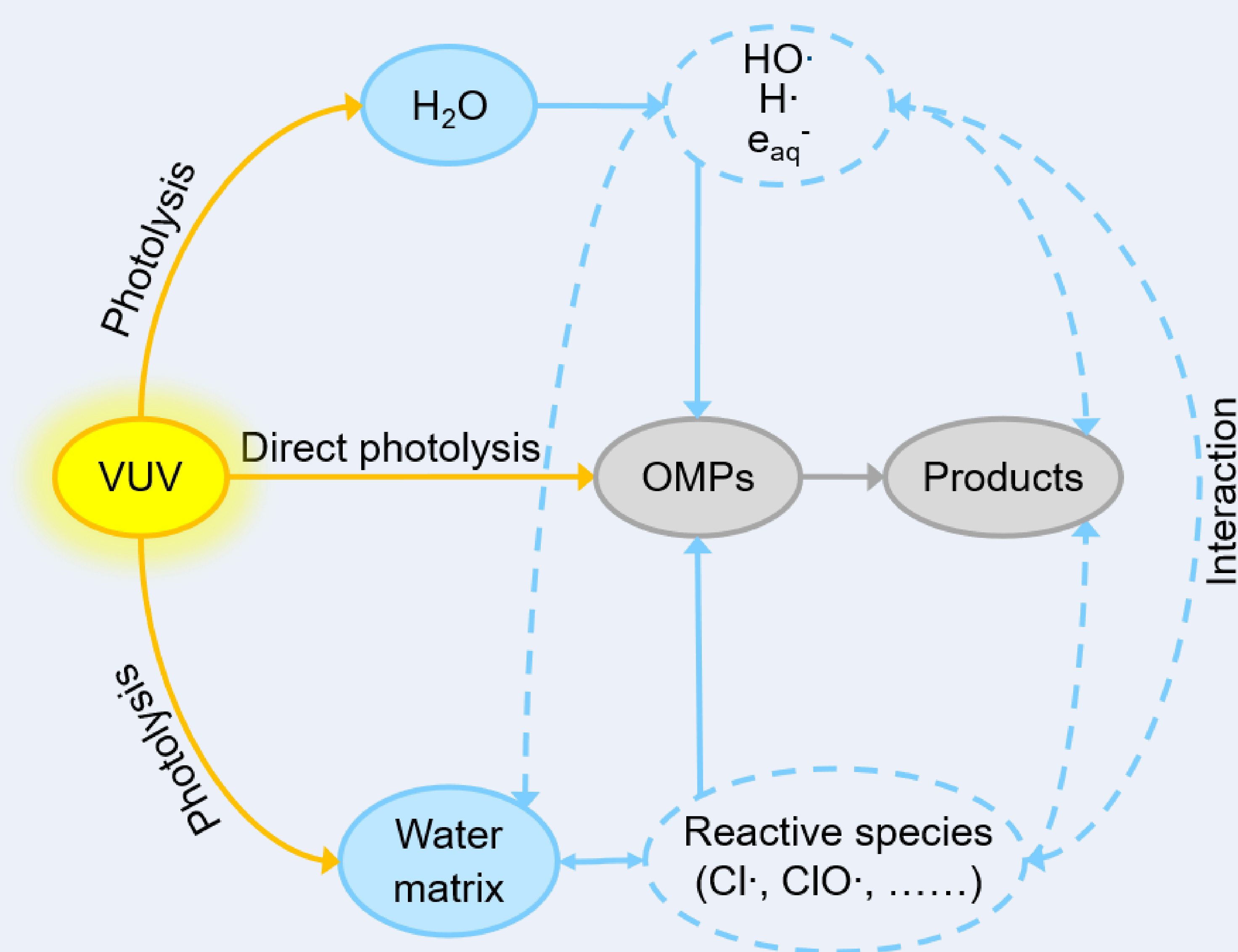


Fig 1. Simplified diagram of Vacuum UV process in the water sample.