

**Topic: Vivianite characterization in digested sewage sludge**

**Location:** Wetsus, Leeuwarden

**Duration:** 3-6 months, starting in October 2019

**Compensation:** 350 €/month living expenses

## Background

*ViviMag* is a novel technology, developed at Wetsus, that magnetically recovers the iron-phosphate mineral vivianite ( $Fe_3(PO_4)_2 \cdot 8H_2O$ ) from digested sewage sludge. *ViviMag* has many benefits, one of them being phosphate recovery. Phosphate is an essential nutrient and its recovery from sludge and re-use is becoming ever more important. In the last years, vivianite has become an important and promising player in phosphate recovery. Wetsus is pioneering vivianite recovery, and there is still a lot to learn about vivianite occurrence in sludge. This internship will contribute to acquiring that knowledge.

## Internship plan

Sludge samples from 10-15 different wastewater treatment plants will need to be characterized on vivianite content, quality and recoverability. The main method that is used is microwave-assisted digestion in acid followed by ICP-OES analyses. Other tasks include thermo-gravimetric analysis, microscope study, SEM-EDX investigation and processing of the data.

The first 3 months of internship will be focused on vivianite in digested sewage sludge. In case the internship is extended to 6 months, there is similar work to be done on resource recovery from a dust fraction of a steelmaking plant.

## What is in it for you?

You will be able to work on an exciting, innovative, EU-funded project with industrial partners where you have the chance to learn or improve many scientific skills such as sampling, sample preparation, analytical methods and data analyses.

At Wetsus, you will work in a young, dynamic and inspiring environment with around 60 PhD and 40 BSc/MSc students from many different nationalities working on a wide range of research topics in water technology.

## Requirements

- Student in chemistry, chemical engineering, environmental engineering or similar.
- Experience in a chemical lab with the ability to work safely and securely.
- Able to work well independently and take initiative.
- Fluency in English

## Application

For questions about this internship, please contact Wokke Wijdeveld ([wokke.wijdeveld@wetsus.nl](mailto:wokke.wijdeveld@wetsus.nl)) or apply directly by sending your C.V. with cover letter to the same address.