Motivation
The incentive for phosphorus recovery is based on two arguments. First, phosphorus is a finite resource and, secondly, the discharge of phosphorus-containing wastewater in densely populated areas causes severe environmental impact.

Technological challenge
De Graaff et al. (2010) showed efficient energy recovery (methane) from the separated treatment of black water using UASB technology, in which 60% of the total income of phosphorus remains in the effluent [2]. Tervahauta et al. (2014) discovered calcium phosphate granules and reported a recovery of 2% of the total income of phosphorus from black water [1]. The challenge is to enhance the recovery of calcium phosphate, with minimum addition of chemicals, while the conversion of organics from black water is not reduced. The mechanisms for calcium phosphate formation are not yet understood. The effect of an increased pH, established by the external biofilm of the granules, is hypothesized. Therefore, research in the fields of microbiology, chemistry, hydrodynamics and engineering of the granules and process, will reveal the driving forces for the precipitation to occur and will give insights for improvement and optimization of the process.

Research goals
• To maximize the recovery of phosphorus as calcium phosphate
• To minimize the addition of chemicals
• To unravel the mechanisms of the calcium phosphate formation
• To determine the environmental and process conditions in UASB reactors, that nameable simultaneous methane production and calcium phosphate recovery