

Master Thesis Work Fall 2017,  
in Separation Science, Analytical Chemistry, PT&D, AstraZeneca Mölndal

## **Titel:**

# **Explorations in separation methodologies employing supercritical fluid chromatographic and ultra-high pressure liquid chromatography and conditions.**

## **Background**

Chromatographic methodologies are among the most used techniques in analytical measurements and employed in diverse fields such as pharmaceutical, medical, petrochemical, forensic, etc. Samples can be of natural or synthetic origin from low molecular weight to polymers in the range of millions. Although liquid chromatography has been around for decades, a continuous development in instrumentation and configuration have taking place. This includes supercritical fluid chromatography (SFC) which has gained a renewed and increasing interest within separation science, especially regarding analytical-scale separations and, again, mainly driven by instrumental improvements. Compared to liquid chromatography, fast separations with high resolution can be obtained under various conditions extending from non-polar to relatively polar.

## **Objective**

In SFC the advancement of polar analytes are especially important in attempt to push the border for such compounds in this otherwise more "hydrophobically" oriented technique. One goal is to obtain an understanding of chromatographic conditions and how these can expand the applicability of the technique towards polar samples and possibly contribute to a compatibility to complex constituents/matrices. Where appropriate the results are to be compared with UHPLC capabilities. Another is to find generic approaches for method development within SFC.

Chromatographic parameters, e.g. type of column, mobile phase composition, additives, pressure, and temperature will be varied to examine peak performance and selectivity.

Applicant: should have a basic background in Analytical Chemistry, preferably with previous experience in liquid chromatographic separation techniques.

Supervisor: Morgan Stefansson, AstraZeneca, Mölndal  
E-mail: morgan.stefansson@astrazeneca.com