

Master Thesis Work **Fall 2018**,  
in Separation Science, Analytical Chemistry, Cambrex Karlskoga

## **Degree work at Cambrex Karlskoga: Investigations of a new separation method for chiral active pharmaceutical components – a cooperation with Karlstad University**

### **Background**

Liquid chromatographic methodologies are among the most used techniques in analytical measurements and employed in diverse fields such as pharmaceutical, medical, petrochemical, forensic areas. Many Active Pharmaceutical Ingredients (API) are chiral and, hence, the possibility to determine the ratio of the two optical forms (enantiomers) are essential for the pharmaceutical industry. Supercritical fluid chromatography (SFC) is a modern most efficient and environmental friendly technique that has gained much attention recently especially regarding analytical-scale separations due to many new innovative instrumental improvements.

### **Objective**

The use of normal phase chromatography to separate enantiomers is one of the most common strategy. However, the solubility of more polar analytes can be a concern when normal phase chromatography is used.

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.

The knowledge of molecular interactions between the stationary phase and the analyte is the basis for a successful chiral separation and, hence, are of fundamental interest.

Here, SFC with different chromatographic conditions will be used to study the retention mechanism for some chiral API. Where appropriate the results are to be compared with results obtained by normal phase HPLC. Another goal 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.

**About you:** you can be a master student in chemical engineering (including the programs biotechnology/ bioinformatics) or in chemistry with focus on analytical chemistry/ organic chemistry/ biochemistry or similar. The applicant should have an interest for analytical separation techniques such as liquid chromatography. The project will be a cooperation between Cambrex Karlskoga and the leading Swedish separation experts at Karlstad University: Fundamental Separation Study Group ([www.FSSG.se/degree-projects](http://www.FSSG.se/degree-projects)). The majority of the work will be conducted at Karlstad University but a substantial amount of time will also be spent at Cambrex Karlskoga, hence, you are ideally placed in Karlstad. Travel money will be available for visits to Cambrex Karlskoga.

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

Other: The graduate will receive a reward upon completion of diploma work (30hp).

### **Are you interested?**

*For general questions, please contact:*

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