CASE STUDY

Method development for high throughput sample analysis

The challenge

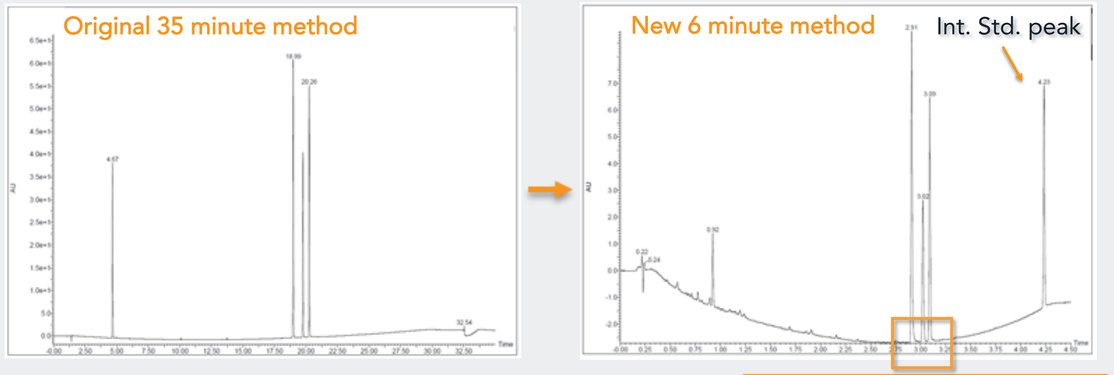
CatSci was tasked with catalyst screening for an asymmetrical hydrogenation of a target. To quickly explore reaction conditions, high throughput screens (up to 96 experiments per single run) were carried out. The original customer method had a run time of 35 minutes – limiting for high throughput development. A new faster method was required that maintained the required critical resolution between peak pairs.

How?

Column and chromatographic conditions were screened using a design of experiments approach, to optimise method parameters. CatSci's extensive analytical development experience maintained critical pair resolution and delivered methods with dramatically shorter analysis time.

The achievement

A 6-minute UPLC method was successfully developed which allowed the chemist to analyse the catalyst screening results with 24 hours of completing the experiment.





The team: Dr Siân Forsyth, Gareth Tutton & Beth Rees

Old Process	New Process
Achiral UPLC screening method – 35 minute analysis time	Achiral UPLC screening method – 6 minute analysis time
Potential analysis time for 96 samples = 56 hours	Potential analysis time for 96 samples = 9.6 hours
Amount of solvent A (aqueous buffer) used for a 96 sample run = 495 mL	Amount of solvent A (aqueous buffer) used for a 96 sample run = 220 mL
Amount of solvent B (organic solvent) used for a 96 sample run = 512 mL	Amount of solvent B (organic solvent) used for a 96 sample run = 183 mL

Facts and Figures

Water Waste
44% less

Analysis time saved
83% less

Solvent Waste
36% less

AMVI*
42% less

*Analytical Method Volume Intensity (Green Metric)

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