



Fast Separation of Ten Triazine Herbicides

Adam Schellinger and Dr. Peter Carr
University of Minnesota

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This application note shows the separation of ten related triazine herbicides using a ZirChrom®-PBD column. Baseline resolution of all ten compounds was obtained at elevated column temperature in under 3 minutes using LC/MS compatible gradient elution.

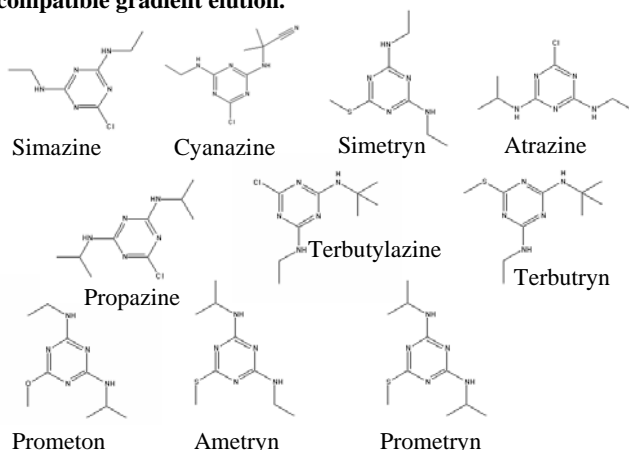


Figure 1: Structures of triazine herbicides

Introduction

Historically, the preferred analysis method for triazines, like many herbicides, has been gas chromatography. Although HPLC techniques are non destructive, allow for large volume injections (on column enrichment), and allow the use of a wide range of detectors, their use in this application has been hindered by long run times necessary to achieve the desired resolution. Previous method development efforts incorporating zirconia-based HPLC columns to separate these compounds achieved baseline resolution with a two-column T³C approach, but run times still exceeded 10 minutes (1). Here we present a new HPLC method that exploits the unique selectivity and thermal stability of the ZirChrom®-PBD column to separate ten triazine herbicides in less than three minutes, four times faster than the previous method, with a LC-MS compatible mobile phase.

Experimental

A mixture of ten triazine herbicides was separated at 95 °C using a ZirChrom®-PBD column. The separation conditions were as follows:

Column: ZirChrom®-PBD, 75 mm x 3.0 mm i.d.
(Part Number: ZR03-0730)
Mobile Phase: Gradient Elution:
A: Water, B: Acetonitrile

| Time (min) | % A | %B |
|------------|-----|----|
| 0.00 | 100 | 0 |
| 4.75 | 60 | 40 |

Temperature: 95 °C with Metalox™ 200-C column heater

Pressure Drop: 360 bar
Detection: UV at 254 nm

We report here a method that capitalizes on the unique temperature stability and surface chemistry of a zirconia-based stationary phase to achieve baseline resolution of these compounds in less than 3 minutes.

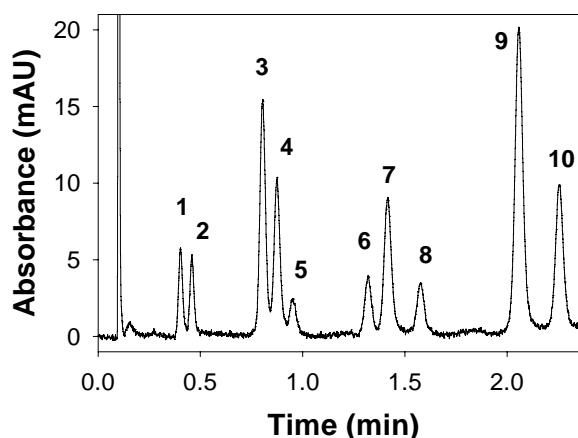


Figure 2: Separation of 1) Simazine; 2) Cyanazine; 3) Simetryn; 4) Atrazine; 5) Prometon; 6) Propazine; 7) Ametryn; 8) Terbutylazine; 9) Prometryn; 10) Terbutryn on a ZirChrom-PBD in under 3 minutes at 95 °C

This method can be tailored to your specific application needs. ZirChrom technical support can help to optimize and transfer this method to your site. Please contact ZirChrom technical support at 1-866-STABLE-1 or support@zirchrom.com for details.

ZirChrom phases offer unique selectivity, high efficiency, and excellent chemical and thermal stability.

References

(1) Mao, Y.; Carr, P.W.; Anal. Chem. 2000, 72(13), 2788-2796.

ZirChrom Separations, Inc.
617 Pierce Street, Anoka, MN 55303
1-866-STABLE-1
support@zirchrom.com

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