

## Purification of polar compounds

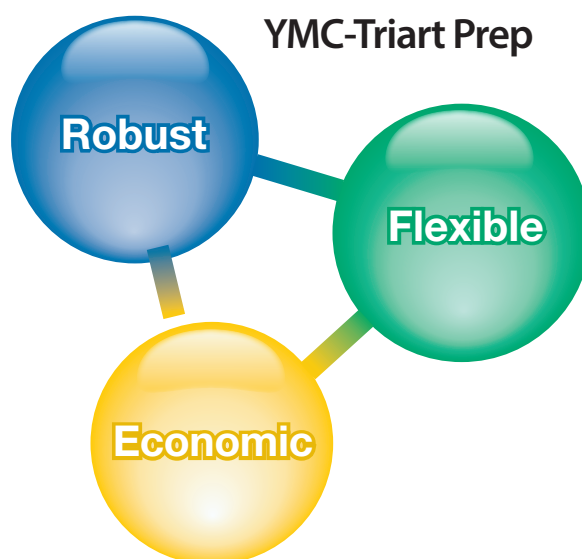


### Challenging Task

The use of 100% water as an eluent has been a challenge in HPLC separation for decades. Even today, many C18 materials suffer from unacceptable short lifetime, as a result of the C18 chains collapsing which reduces the separation performance drastically. As a pioneer in the field of aqueous compatible phases, YMC has offered suitable products since the 80's for stability under aqueous conditions.

### Solution

Ability to work with 100% aqueous conditions opens the door to extend the purification range to include polar compounds efficiently and economically. Due to their equivalent selectivity processes can be easily scaled up from analytical to preparative scale. Furthermore, de-salting can be performed using RP-C18 phase to reduce one step within the downstream processing. YMC-Triart Prep combines high mechanical strength with chemical stability to ensure robust, long-lasting and economic purifications.

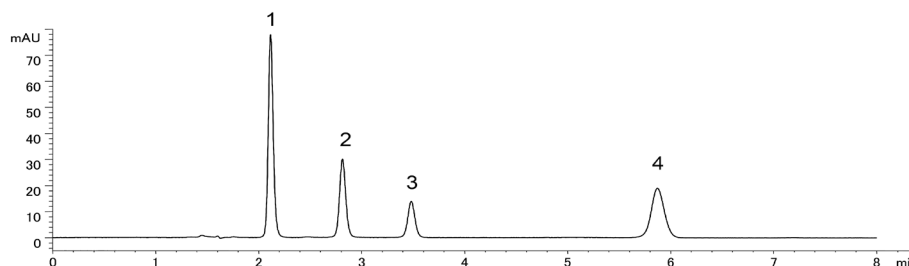


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### Scalability from analytical to prep

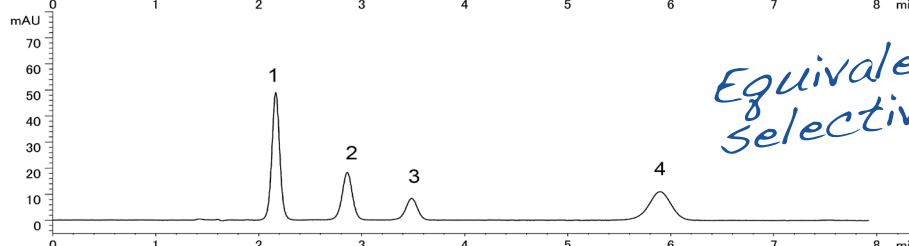
#### Triart C18 5 $\mu\text{m}$

$tR_4$  = 5.87  
 $N_4$  = 10400  
 $Tf_4$  = 1.03  
 $a(3, 4)$  = 2.11



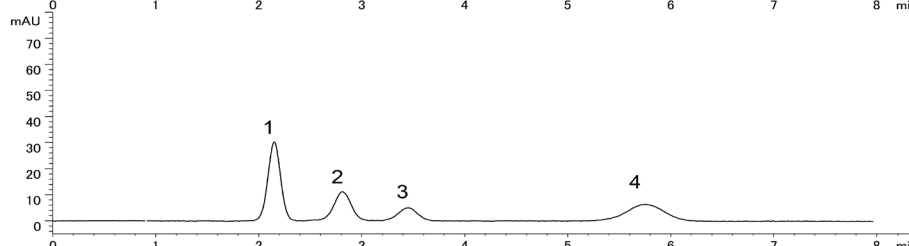
#### Triart Prep C18-S 10 $\mu\text{m}$

$tR_4$  = 5.90  
 $N_4$  = 3500  
 $Tf_4$  = 0.91  
 $a(3, 4)$  = 2.12



#### Triart Prep C18-S 20 $\mu\text{m}$

$tR_4$  = 5.69  
 $N_4$  = 1100  
 $Tf_4$  = 0.95  
 $a(3, 4)$  = 2.11



Eluent: 20 mM  $\text{H}_3\text{PO}_4$   
 Sample: 1. Tartaric acid (0.5 mg/mL)  
           2. L-Malic acid (0.5 mg/mL)  
           3. Lactic acid (0.5 mg/mL)  
           4. Citric acid (0.5 mg/mL)

With YMC-Triart Prep, a pH stable preparative grade HPLC stationary phase is available. This hybrid material can be produced in lot sizes of up to several hundred kg. The robustness of the phase and its availability in multi-ton quantities makes it well suited for production scale applications.

YMC-Triart Prep is chemically stable up to pH 10.0 which provides more flexibility for method development and also allows for more efficient cleaning-in-place (CIP) procedures. From real-life process development work YMC-Triart Prep has been shown to outperform traditional silica-based materials in terms of durability up to 4-fold. Longer column lifetimes lead to greater amounts of product being separated per kilogram of stationary phase. The results are: improved production procedures and reduced overall costs.

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