

# Looking Beyond ODS - Unique Stationary Phases for Sub-2 Micron HPLC Columns

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## Goal

To develop HPLC stationary phases that utilize chromatographic interactions other than hydrophobic. In addition, to develop bonding strategies, for non-ODS phases to take advantage of the superior capabilities of sub 2 micron particles.

## Introduction

Sub 2 micron Performance

- High resolution
- High speed analysis
- High resolution and high speed analysis

Possible Reversed Phase Interactions

- Hydrophobic interactions
- Adsorption vs. partition
- $\pi$ - $\pi$
- Charge transfer
- Polar embedded

Sub 2 micron phases other than ODS based phases can extend the separation capabilities of HPLC

## Discussion

Looking Beyond C18

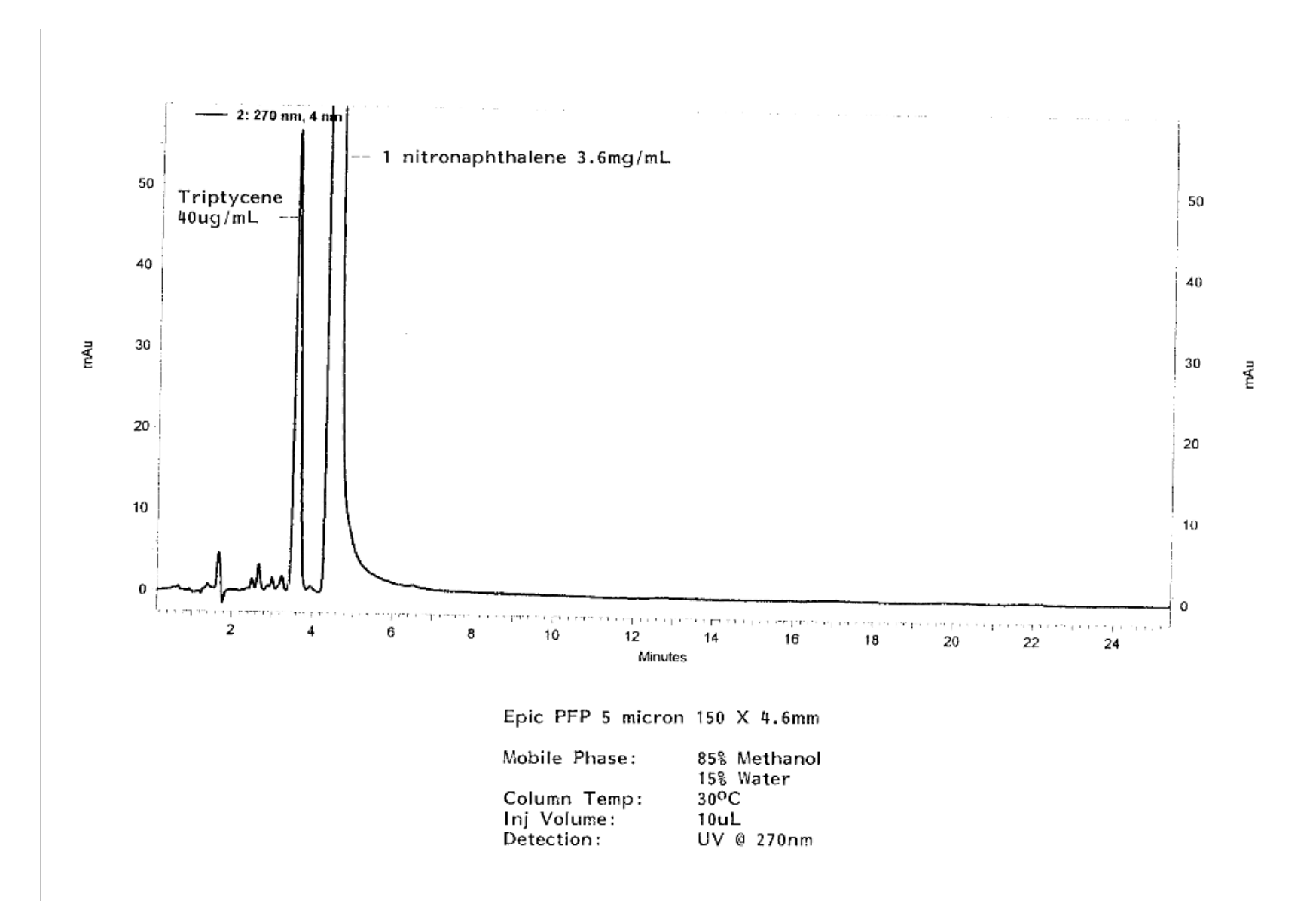
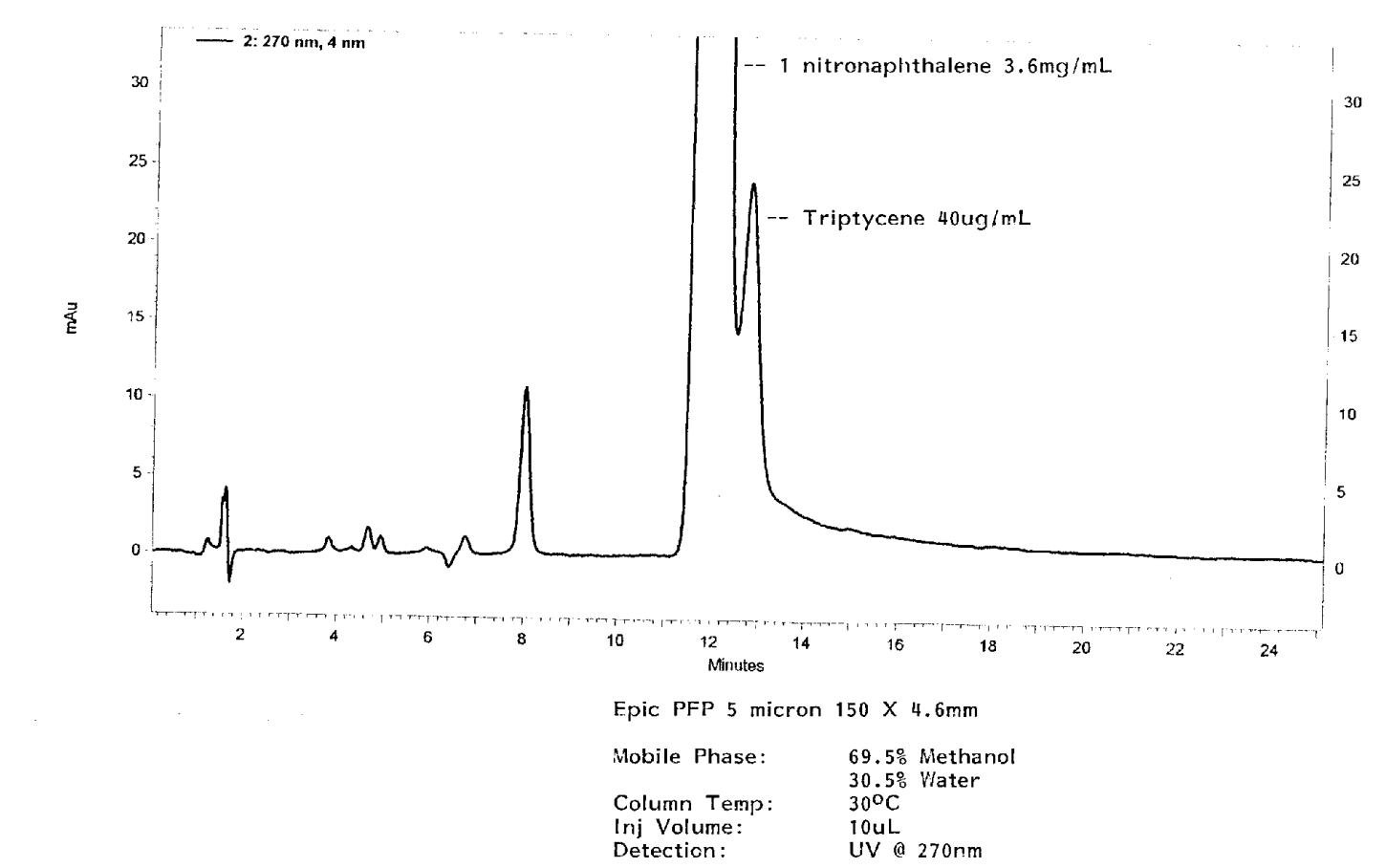
- Separations on C18 primarily rely on hydrophobic interactions

- Non-hydrophobic stationary phases can provide different interactions

- Interactions such as  $\pi$ - $\pi$ , charge transfer and hydrophilic

Non-hydrophobic interactions can:

- Improve selectivity
- Improve quantation
- Improve Mass Spec sensitivty



ES Industries Non-Hydrophobic Offerings Include:

- A wide variety fluorinated stationary phases including phenyl and alkyl based selectors

- Extensive line of HILIC phases

- Extensive line of polar embedded phase

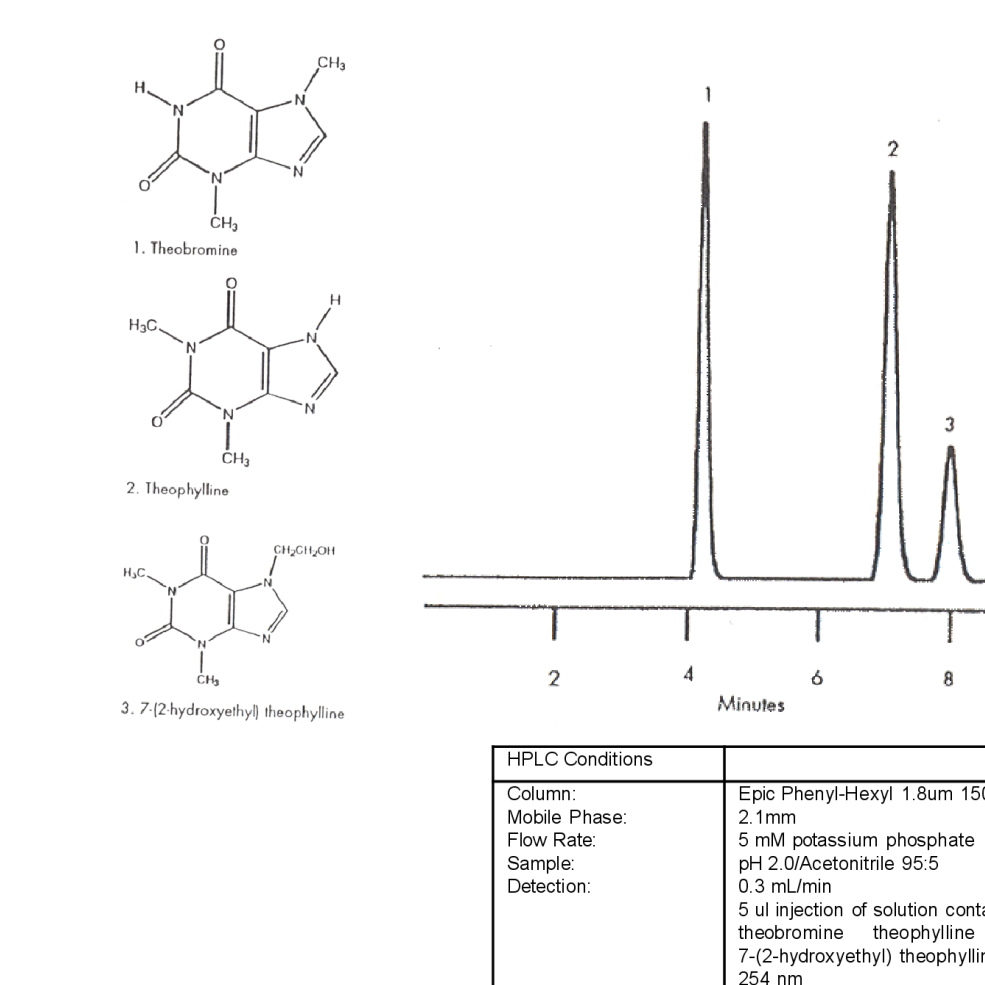
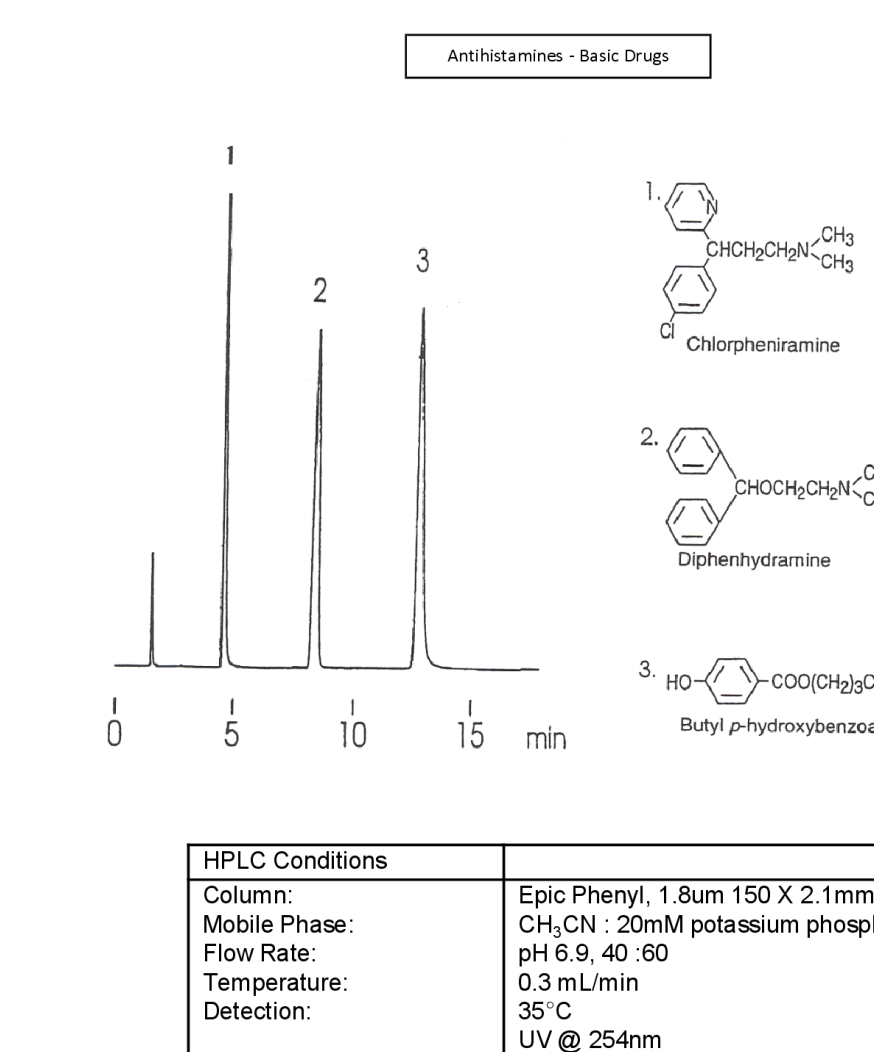
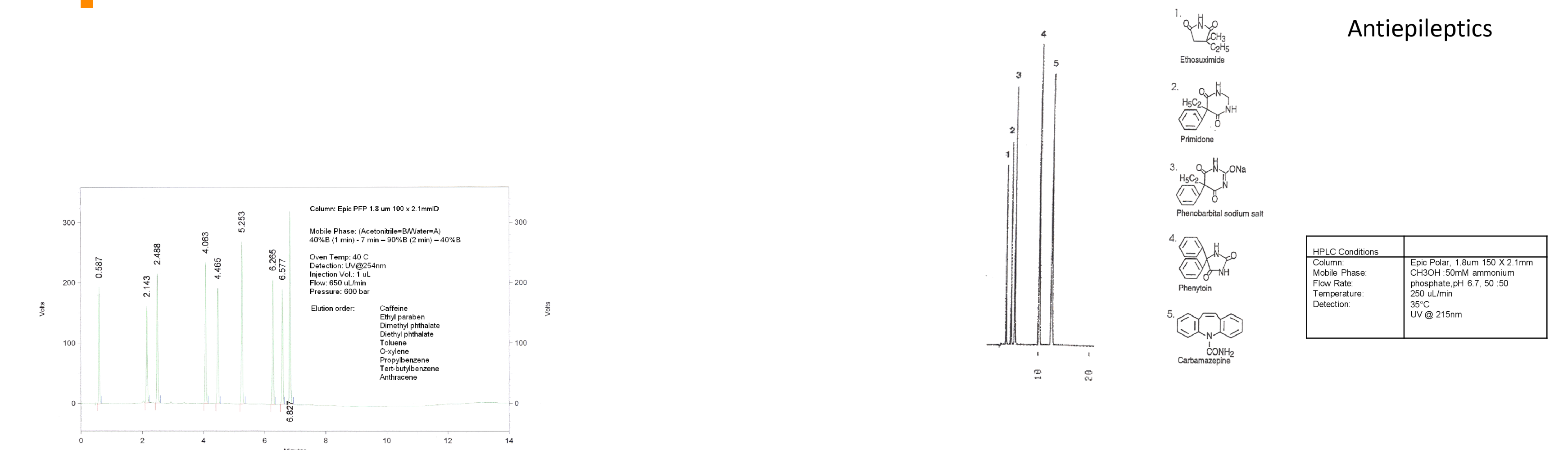
- Extensive line of unique aromatic based phases including nitro, amino phenyl and pyridyl amide

ES Industries the Leader in the Development of Unique High Performance Sub 2 Micron Columns

Current develop products include:

- Epic Biphenyl
- Epic Nitro (nitro aromatic)
- Epic Naphthyl
- Epic Phenyl-Hexyl
- Epic FO (Perfluorinated octyl)
- Epic PFP (Perluorinated phenyl)
- Epic Polar (ether linked C18)
- Epic HILIC-HC (polymeric hydroxylated phase)
- Epic HILIC FL (fluorinated based)
- Epic HILIC PL (phenyl amino based phase)

## Examples



## Conclusions

We have developed a number of stationary phases that utilized interactions other than hydrophobic interaction

We have developed bonding strategies to advantage of superior performance from sub 2 micron particles for these non ODS based stationary phases

We have provided the chromatographers with new set of separation tools