

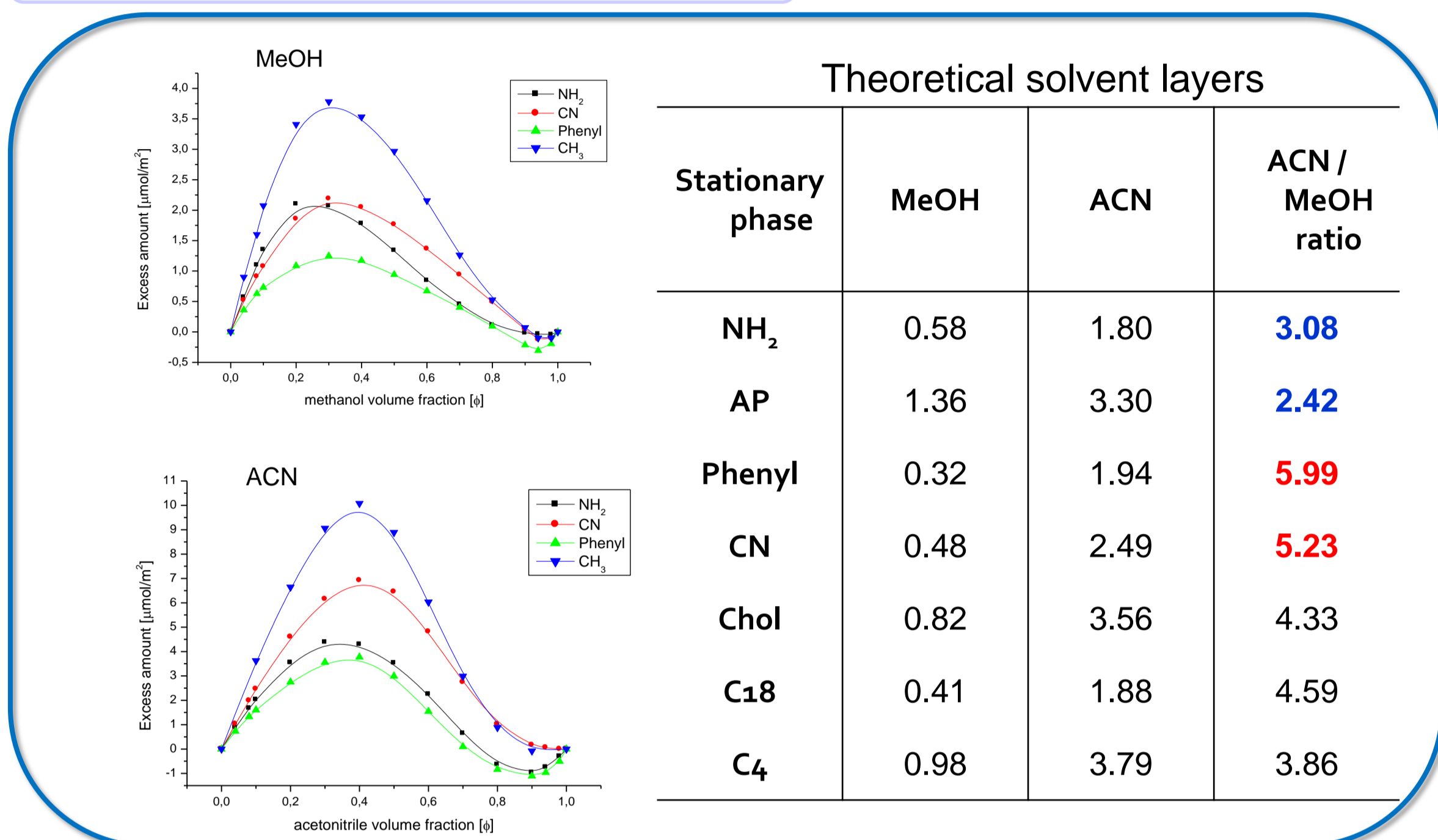
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## INTRODUCTION

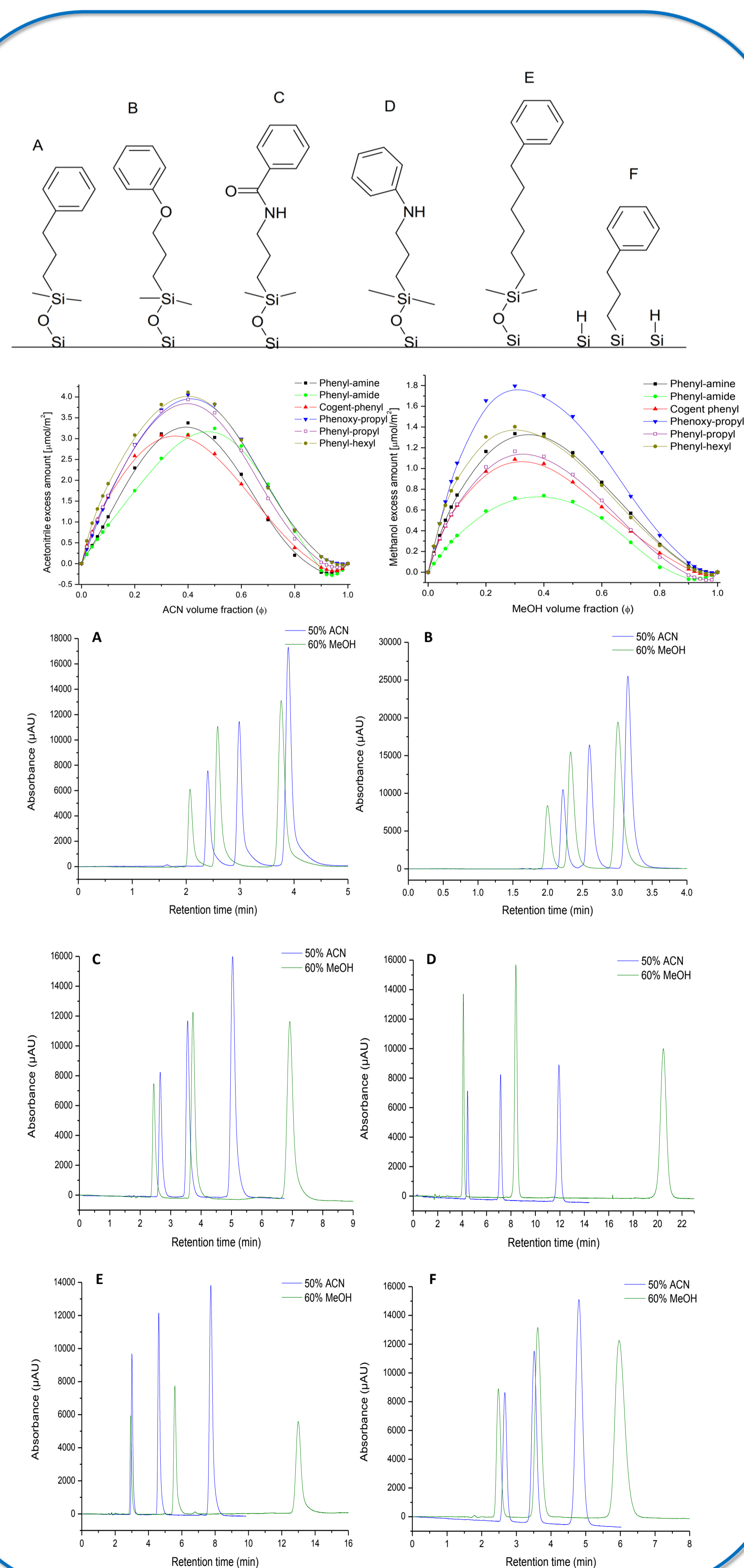
Solvation is an indispensable part of the elution in liquid chromatography. The adsorption of solvents allows the elution of a solute from the adsorbent surface. The tendency for the adsorption of solvent molecules on the stationary phase surface results in the elution strength of a solvent. Therefore, the knowledge and the understanding of solvation process are crucial for the understanding of the retention mechanism of liquid chromatography separation.

## SELECTIVE SOLVATION

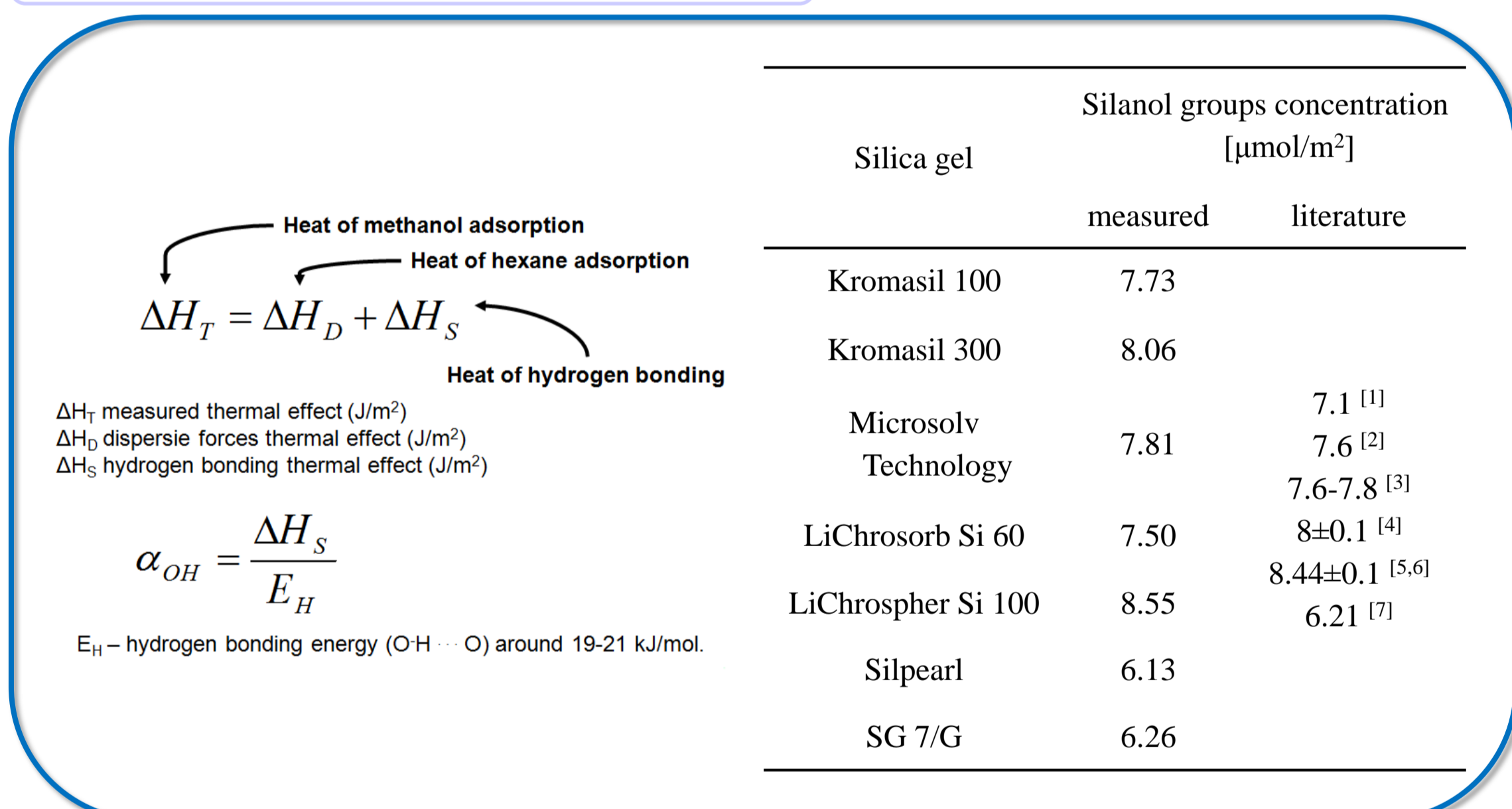


## INFLUENCE ON RETENTION

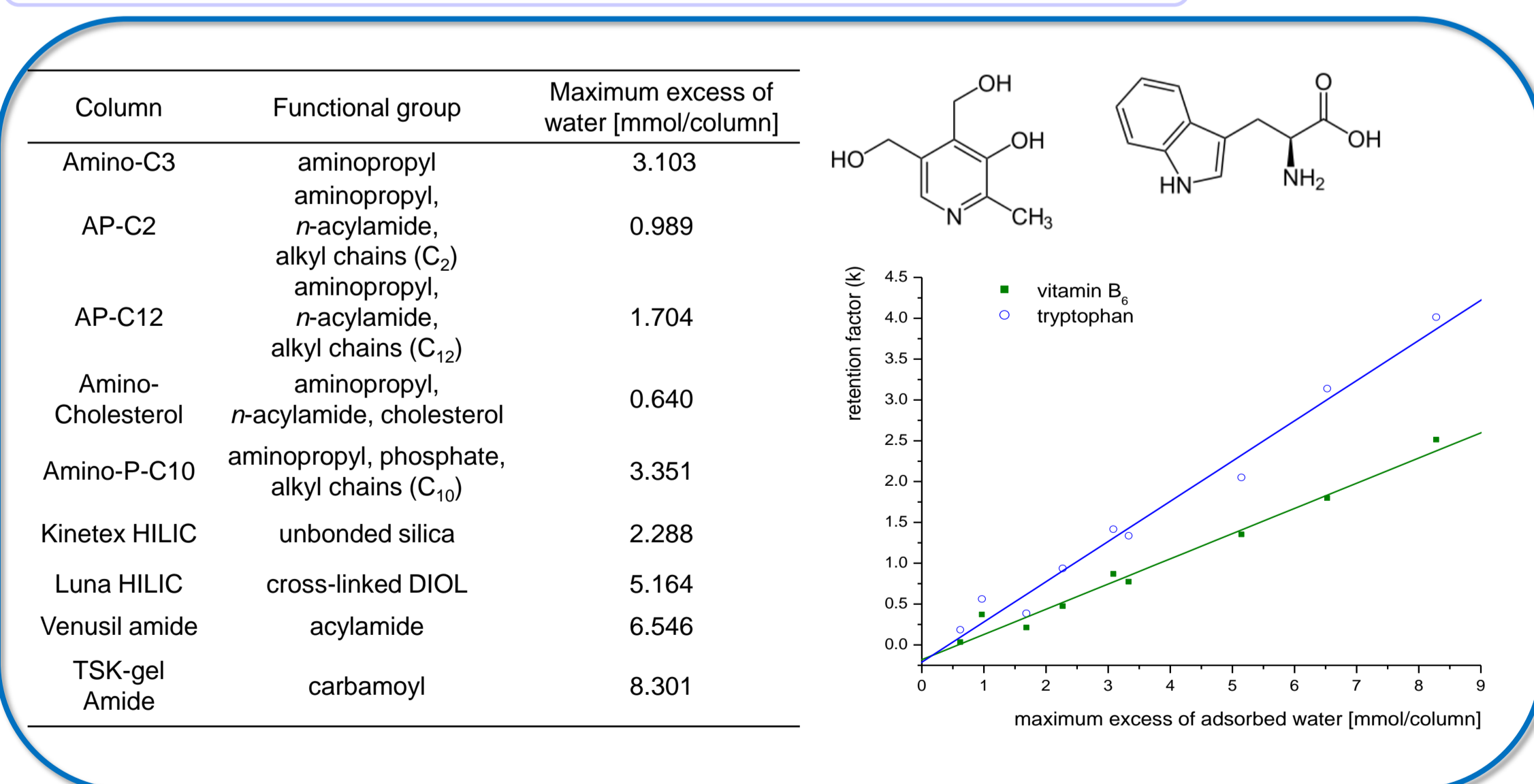
Changes of solute retention caused by solvation process; benzene, anthracene, phenanthrene in isoelectronic mobile phase conditions ACN/H<sub>2</sub>O (50/50<sub>v/v</sub>) and MeOH/H<sub>2</sub>O (60/40<sub>v/v</sub>) on a series of phenyl-bonded stationary phases: Phenyl-amine (A), Phenyl-amide (B), Phenoxy-propyl (C), Phenyl Hydride (D), Phenyl-hexyl (E), Phenyl-propyl (F)



## SILANOLS CALCULATION



## SOLVATION vs. RETENTION IN HILC



## CONCLUSIONS

Summarizing, the solvent from binary mobile phase interacts preferentially with the functional groups on the surface of the stationary phase. For understanding the distribution of the solvent between the stationary phase and a bulk binary solution the excess adsorption of the organic modifier has to be described. The presence of polar functional groups incorporated into the structure of bonded ligands changes the solvation process due to polar interactions and hydrogen bond creation. The measurement of solvation process allows to calculate the number of silanols on silica surface.

## Acknowledgements

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