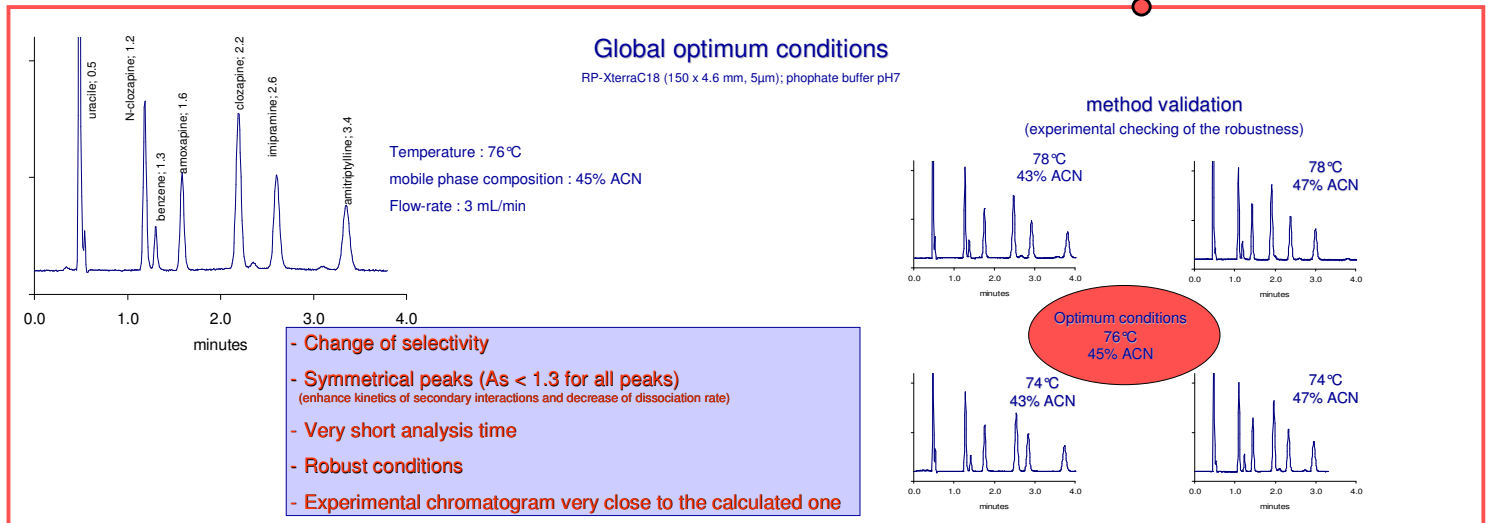
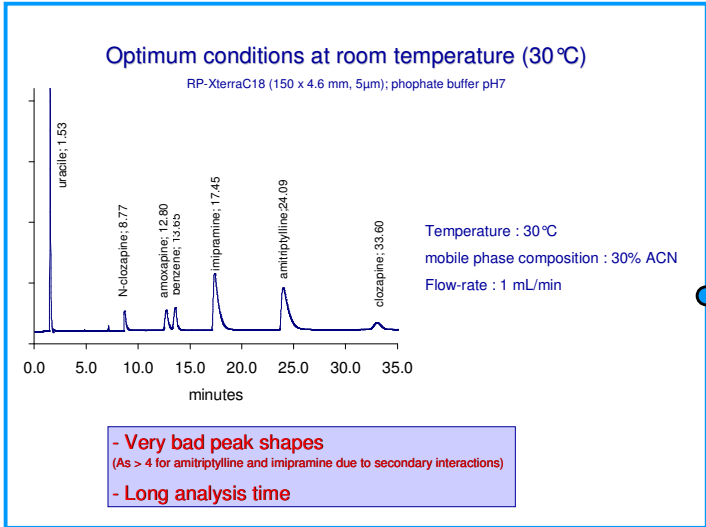
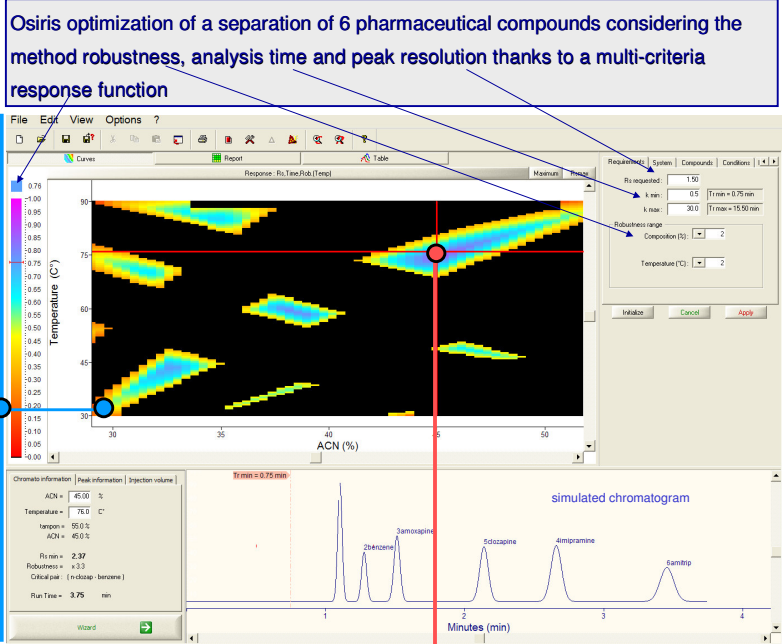


## Introduction

The simultaneous optimization of temperature and mobile phase composition requires nine experiments<sup>(1)</sup>.

This kind of optimization may be very beneficial to the separation of complex mixtures of pharmaceutical compounds for several reasons:

- 1 – The viscosity decreases when temperature is elevated and therefore the flow-rate may be increased without loss of efficiency (twofold to fivefold depending on the temperature<sup>(2)</sup>)
- 2 – The kinetics of solute transfer are faster at high temperature, leading to more symmetrical peaks
- 3 – The solute dissociation rate is usually lower at high temperatures



## Conclusions

An optimization software such as Osiris gives rapidly good and robust conditions for complex mixtures of pharmaceutical compounds

For basic compounds, the optimization of mobile phase composition and temperature offers many advantages over the optimization of mobile phase composition and pH

- 1 – Temperature is more easily varied than pH
- 2 – The robustness is usually better with temperature than with pH due to the precision that can be obtained with temperature compared with pH.
- 3 – High temperatures lead to faster separation and more symmetrical peaks

(1) S. Heinisch, J-L. Rocca, J. of Chromatogr., 1048 (2004) 183.

(2) D. Guilleme, S. Heinisch, J-L. Rocca, J. of Chromatogr., 1052 (2004) 39.