Why Do We Still Use Silica as a Stationary Phase?

Peter Myers

University of Liverpool, Department of Chemistry, Liverpool, UK

Silica was used in the first commercial LC columns dating back to the 1970's and today silica is still the most widely used support for HPLC and UPLC. So, after nearly 50 years why are we still using silica?

Is it that good there has been and still isn't a need for a replacement?

In this lecture I will describe the problems we had with silica in the 1980's and how very little progress has been made to date. In the 1980's we had 5micron spherical totally porous particles. Today we have 1.5micron particles. Is this a real development?

I will describe how bonded phase chemistries have had to develop to help conceal silica problems. In the 1980'the most popular phase was octadecyl. Today the most popular phase is still octadecyl. Is it that good?

Compare this to the computer revolution. In the 1980's we had Apple, Commodore, Atari, BBC Micro TRS-80, ZX81, ZX Spectrum, Commodore 128, and the Amstrad. Today we have i-pads, computers surfaces and smartphones all of which have hundreds or even thousands of times more processing power than the computers of the 1980's. Has chromatography moved on that fast?

But the main focus of the lecture will be to look into the future and offer some new alternatives to silica and also offer some new separation methods that do not rely on the classical theory of adsorption or partitioning and certainly do not rely on packed silica columns.