

World Congress on

# CHROMATOGRAPHY AND SEPARATION SCIENCE

&

International Conference and Exhibition on

# SATELLITE AND SPACE MISSIONS

November 12-13, 2018 | Rome, Italy

J Chem Tech App 2018, Volume 2

## NOVEL APPROACH TO PREPARE HIGH QUALITY PHOTONIC CRYSTALS FOR SEPARATION USAGE

**CHEN YI**

University of Chinese Academy of Sciences, China

Photonic crystals (PCs) have ordered structure with optical band gap at the visible range or crystal lattice at the size of several hundreds of nano meters. PCs assembled from particles can offer pass-through nano-pores which, in theory, readily produce ultra-high performance of separation. Unfortunately, in practice their real applications were limited to the separation of a few compositions because they are hard to prepare unless highly mono-disperse nanoparticles are used that take time to prepare and cost high. In fact, mono-disperse particles do not necessarily uniformly order inside the assembled PCs but often separate into various domains. The domain borders can destroy the separation efficiency and easily cause clumps of PC-packed columns. Herein we present a novel approach to assemble PCs from polydisperse particles which are easily synthesized in a normal laboratory at a very low cost. The obtained PCs were measured to have sharp band gaps. They can be shaken in disarray but soon recover their ordered structure after settling for about decade seconds. Such a type of PCs can thus be made into various shapes so that they can be used to write iridescent letters, to paint colorful pictures, and of course to fill capillary columns. The PC-filled capillary columns have been shown to yield fast (in seconds) and high separation efficiency in electro-chromatographic studies.