Comparison of conventional and innovative techniques for monolith homogeneity analysis

Abstract

For more than a decade, monolith up scaling has been a huge hurdle as it is tricky to eradicate the exothermic heat associated with the construction of polymethacrylate monolithic column that builds up instantly and results in cracking of monolith sorbents and heterogeneous pore size distribution. Temperature profiling and average pore size analysis have been the most common methods done to determine the degree of heterogeneity caused by internal heat buildup. In our opinion, the mean pore size alone failed to provide enough information to prove the monolith is indeed non - or homogeneous. In this research, we have incorporated pore size distribution analysis together with temperature profiling and qualitative analysis through SEM (PTS) to make a conclusive judgment on homogeneity of monolith. The findings showed that PTS analysis provided more data and trends that could accurately determine the homogeneity of monolith compared to conventional analysis method.