# Industrial radiotracer technology for process optimizations in chemical industries – a review


## ABSTRACT

Radioisotope techniques are constantly and extensively used all over the world as a method to identify process systems malfunctions in various industries without requiring the shut down of the processing plant thus leading to high economical benefits to the plant owner. Different aspects of industrial radiotracer technology for troubleshooting, process control and optimization are evaluated through an exhaustive literature survey. The review covers the advantages of radiotracers, most commonly used radiotracers in industry for specific studies, applications of radiotracer techniques in various chemical industries, the design of radiotracer technology experiments, radiation detection and data acquisition in radiotracer technology as well as radiological safety aspects. Two industrial radiotracer techniques of residence time distribution (RTD) measurements and radioactive particle tracking (RPT) are discussed. The design of radiotracer technology experiments are also divided into two categories-radioactive particle tracking applications and residence time distribution applications.



**Keyword:** Industrial process; Industrial radiotracer; Process optimization; Radioactive particle tracking; Residence time distribution