

## Hydrodynamics of Dual Hybrid Impeller of Stirred Reactor Using Radiotracer

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**Abstract :** The present work describes hydrodynamics of mixing characteristics of two dual hybrid impeller consisting of, radial and axial impeller using radiotracer technique. Type A mixer, a Rushton turbine is mounted above a Pitched Blade Turbine (PBT) at common shaft and Type B mixer, a Rushton turbine is mounted below PBT. The objectives of this paper are to investigate the residence time distribution (RTD) of two hybrid mixers and to represent the respective mixers by RTD model. Each type of mixer will experience five radiotracer experiments using Tc99m as source of tracer and scintillation detectors NaI(Tl) are used for tracer detection. The results showed that mixer in parallel model and mixers in series with exchange can represent the flow model in mixer A whereas only mixer in parallel model can represent Type B mixer well than other models. In conclusion, Type A impeller, Rushton impeller above PBT, reduced the presence of dead zone in the mixer significantly rather than Type B.

**Keywords :** hybrid impeller, residence time distribution (RTD), radiotracer experiments, RTD model

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