

# Bed structure and its impact on liquid distribution in a trickle bed reactor

Akarsha Srivastava<sup>1</sup>, Krishna Nigam<sup>1</sup>, and Shantanu Roy<sup>2</sup>

<sup>1</sup>Indian Institute of Technology Delhi

<sup>2</sup>Indian Institute of Technology (IIT) - Delhi

September 25, 2021

## Abstract

The work reported in this investigation involves the determination of the hydrodynamic properties of the Trickle Bed Reactor which has been loaded in various ways to mark the effect of the loading methodologies employed to pack the catalyst pellets. The bed structure of a packed three-phase reactor is critical to study as it provides the essential contact between the phases and provides the catalytic sites where the reaction takes place. Depending on the structural properties of the bed such as local void structure, liquid distribution, two-phase pressure drop, and holdup of fluids gets affected. The study aims to envelop the catalyst bed characteristics such as the local void structure, the length of the catalyst bed, flow characteristics such as liquid and gas flow rate, and liquid distributor at the top of the catalyst bed to gauge and quantify their effect on the hydrodynamics of a trickle bed reactor.

## Hosted file

Manuscript\_Hydrodynamics AS SR.docx available at <https://authorea.com/users/436218/articles/538706-bed-structure-and-its-impact-on-liquid-distribution-in-a-trickle-bed-reactor>

## Hosted file

List of Figures.docx available at <https://authorea.com/users/436218/articles/538706-bed-structure-and-its-impact-on-liquid-distribution-in-a-trickle-bed-reactor>

## Hosted file

Figures.pptx available at <https://authorea.com/users/436218/articles/538706-bed-structure-and-its-impact-on-liquid-distribution-in-a-trickle-bed-reactor>

## Hosted file

List of Tables.docx available at <https://authorea.com/users/436218/articles/538706-bed-structure-and-its-impact-on-liquid-distribution-in-a-trickle-bed-reactor>

## Hosted file

Tables.docx available at <https://authorea.com/users/436218/articles/538706-bed-structure-and-its-impact-on-liquid-distribution-in-a-trickle-bed-reactor>