# Article information:

PEPT验证的喷口床中非球面颗粒运动的CFD-DEM模型 - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S1385894722051683?via%3Dihub>

# Article summary:

1. CFD-DEM is a common approach for the numerical simulation of spouted bed processes.

2. Several numerical approaches exist for the direct representation of the shape of aspherical particles, such as superquadrics, multi-spheres and the polyhedral method.

3. Positron Emission Particle Tracking (PEPT) is a non-invasive technique that can trace the trajectory of an individual particle precisely, even within large, optically-opaque systems.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “PEPT Validation of Non-Spherical Particle Motion in Spouted Beds - ScienceDirect” provides an overview of CFD-DEM modelling for spouted beds and its validation using PEPT data. The article is well written and provides a comprehensive overview of the topic with clear explanations and examples. The authors provide detailed information on various numerical approaches used to represent aspherical particles, such as superquadrics, multi-spheres and the polyhedral method, as well as drag correlations used to estimate drag force on an isolated aspherical particle. They also discuss how PEPT can be used to validate CFD-DEM simulations and present a workflow for validating CFD-DEM models using PEPT data.

The article is generally reliable and trustworthy; however, there are some potential biases that should be noted. For example, while the authors provide detailed information on various numerical approaches used to represent aspherical particles, they do not discuss any potential drawbacks or limitations associated with these approaches. Additionally, while they discuss how PEPT can be used to validate CFD-DEM simulations, they do not mention any other methods that could be used for this purpose (e.g., high speed cameras). Furthermore, while they present a workflow for validating CFD-DEM models using PEPT data, they do not provide any evidence or examples to support their claims about its effectiveness or accuracy.

In conclusion, overall this article provides a comprehensive overview of CFD-DEM modelling for spouted beds and its validation using PEPT data; however it does have some potential biases which should be noted when considering its trustworthiness and reliability.

# Topics for further research:

* CFD-DEM modelling limitations
* Alternative validation methods for CFD-DEM
* High speed camera validation
* Drag correlations for aspherical particles
* Superquadrics modelling
* Polyhedral method modelling

# Report location:

<https://www.fullpicture.app/item/8eabaa27b8dbd1357f0a1089d63be140>