## Conclusions

1. Separation performance of symmetrical double cyclone separators exceeds the performance of commonly used standard cyclones.
2. Symmetrical double cyclone separators can be designed for particle separation in the range of $d_P \sim \boldsymbol{O}\ (100\ nm)$ which is far beyond the range of application of conventional cyclones.
3. With MISTRAL/PartFlow–3D an efficient tool for the numerical prediction of disperse gas–particle flows in complex 3-dimensional geometries is given.
4. Numerical analysis leeds to a more fundamental understanding of particle separation mechanisms in cyclones.
5. Knowledge from numerical simulation is used for improvement of cyclone design and there particle separation performance.
6. Comparison of experimental and numerical results show the great influence of particle agglomeration and particle–wall adhesive forces for the particle separation process (which can not yet be covered by the present numerical approach).
7. Numerical investigations emphasize the importance of the design of the particle settling chamber for particle separation performance.

## Further development :

- Implementation of a particle–particle collision model
- Further development of parallel Eulerian–Lagrangian approach for high–performance parallel computers (MIMD)
- Simulation of unsteady multiphase flows

**Homepage of the Research Group of Multiphase Flows :**

http://www.imech.tu–chemnitz.de


**Investigation of Particle Separation in Symmetrical Double Cyclone Separators**

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