

عنوان مقاله:

Three-Dimensional Simulation of Airflow and Nano-Particle Beam Focusing in Aerodynamic Lenses (RESEARCH NOTE)

محل انتشار:

ماهنامه بین المللی مهندسی، دوره 20، شماره 1 (سال: 1386)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Goodarz Ahmadi - *Mechanical and Aeronautical Engineering, Clarkson University*

O. Abouali - *Mechanical Engineering, Shiraz University*

خلاصه مقاله:

In this paper airflow, nano-and micro-particle motions in an aerodynamic particle beam focusing system consisting of several lenses, a nozzle and the downstream chamber, was studied. A three-dimensional numerical simulation for the system was presented and the compressible airflow and thermal conditions in the aerodynamic lens system were evaluated. Dilute particle concentration was assumed so that the particle motion does not affect the flow field and a one-way coupling is assumed. In the computational model, an intermediate chamber with different size skimmers downstream of the nozzle was also considered. The simulation results for 3-dimensional flow field showed that the assumption of axi-symmetric flow is reasonable at the downstream of the nozzle. The performance of the lens with air as carrier gas for focusing nano-and micro-particles was discussed. The results showed that the sub 30 nm particle trajectories are three-dimensional and the assumption of the axi-symmetric particle motions is not valid.

کلمات کلیدی:

Aerodynamic, Lenses, Nano, Micro, Particles

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1416386>

