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Transportation of the dust particles using electrical curtain method in TReD(Transport and removal experiments of Dust) device
SOON-GOOK CHO, Hanyang University, SUK-HO HONG, National Fusion Research Institute, MIN-KEUN BAE, IN-JAE KANG, JIN-WOO KIM, HYUNG-JIN KIM, SUNG-KIU JOO, MYOUNG-JAE LEE, KYU-SUN CHUNG, Hanyang University, CENTER FOR EDGE PLASMA SCIENCE TEAM, KSTAR RESEARCH CENTER COLLABORATION — TReD (Transport and Removal experiment of Dust) device is developed to demonstrate the dust removal and reliable dust removal efficiency in realistic scale for the application to advanced tokamaks like KSTAR and/or ITER. Size of the TReD device is the following dimension: 1200(L) x 500(W) x 440(H) mm^3. Negatively charged dust particles are to be levitated by the negative sheath potential, and to be transported by the diffusion (from generation position) and by the mobility (due to the electric field by the bottom electrodes). The bottom electrodes are composed of 86 thin rectangular bars which are separated by 1 mm between electrodes. Al_2O_3 particles are used with size of $1 \sim 10$ μm, as proxies for B_2O_3 dust particles to be generated in ITER. The dust particles are injected by dust dispensers and levitated within sheath potential and transported by three phase electric potential applied to bottom electrodes. Characterization of metal-dust containing Helium plasma is to be made by electrical probes and removal efficiency of the dust is going to be addressed in terms of frequency and magnitude of applied voltage.

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