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정전식모 전극을 이용한 전기집진 장치에 있어서 서브미크론 입자의 포집 성능

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Fine Particles Collection Using an Electrostatic Precipitator Equipped with Electrostatic Flocking Electrodes as Collecting Plates

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ABSTRACT: To improve the collection efficiency of fine particles, electrostatic flocking technique has been employed in this study. This technique is based on increasing surface area of the collecting electrode and on producing gradient force at the tip of fibers to suppress re-entrainment. In this article, an experimental study was performed to evaluate the effect of fine fiber on the collection efficiency of fine particles using the ESP with electrostatic flocking electrodes as collecting plates. The ESP achieved collection efficiency over 94%, which was higher than that of the flat plate electrode for fine particles (0.3-0.5μm in diameter) with a short residence time (0.06s). We confirmed that fine particles agglomerated at the tip of the flocking fibers. These results indicate that the new type ESP examined in this study is effective to improve removal performance of fine particles.

Key words: Electrostatic precipitator(전기집진 장치), Electrostatic flocking electrode(정전식모 전극), Fine particles(미세입자), Gradient force (구배력), Re-entrinment(재비산)