A flow intensification model for granular filter applications ZHAO-
HUI QIN, RICHARD PLETCHER, RODNEY FOX, SHANKAR SUBRAMA-
NIAM, Iowa State University — a flow intensification model is proposed. We first
give an estimation of the flow intensification factor, and then the velocity field in the
vicinity of a single granule subject to the intensified flow is obtained. Creeping flow
is assumed and Happel's model is used to represent the granular media. Based on
the flow field, the initial collector efficiency η_0 is calculated from trajectory analysis
and compared with experimental data. The reasonably good agreement between
the theory and experiments suggests that the current model might be employed as a
starting framework for further theoretical development and numerical modeling for
granular filter applications.

Zhaohui Qin
Iowa State University

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