

## Problem 2A.4

### Loss of catalyst particles in stack gas.

- (a) Estimate the maximum diameter of microspherical catalyst particles that could be lost in the stack gas of a fluid cracking unit under the following conditions:

Gas velocity at axis of stack	= 1.0 ft/s (vertically upward)
Gas viscosity	= 0.026 cp
Gas density	= 0.045 lb <sub>m</sub> /ft <sup>3</sup>
Density of a catalyst particle	= 1.2 g/cm <sup>3</sup>

Express the result in microns (1 micron =  $10^{-6}$ m = 1 $\mu$ m).

- (b) Is it permissible to use Stokes' law in (a)?

*Answers:* (a) 110  $\mu$ m; Re = 0.93