A First Course on Kinetics and Reaction Engineering Problem 10.1

Problem Purpose

This problem will help you determine whether you have mastered the learning objectives for this unit.

Problem Statement

Suppose that the gas phase conversion of A to B is heterogeneously catalyzed and the mechanism is given by reactions (1) through (3). In addition, suppose that gas phase species Z adsorbs reversibly on the catalyst as given in equation (4). Derive an acceptable expression for the rate of generation of B taking place in the presence of Z. Your rate expression should not include any surface coverages.

A + *	(1)
A-*	(2)
B-*	(3)

$$Z + * \rightleftharpoons Z - * \tag{4}$$