

II. 50 points

A catalytic, bimolecular reaction:



is thought to be surface reaction controlling, single site, with all species competing for sites. The following data has been obtained at 400°K (constant):

	run#	P _A (atm)	P _B (atm)	P _C (atm)	-r _A (moles/l _t -min)
P _A and P _C constant	1	1.0	1.0	0.0	0.0200
	2	1.0	2.0	0.0	0.0288
	3	1.0	4.0	0.0	0.0338
P _B and P _C constant	4	1.0	1.0	0.0	0.0201
	5	2.0	1.0	0.0	0.0401
	6	4.0	1.0	0.0	0.0799
P _A and P _B constant	7	1.0	1.0	1.0	0.0185
	8	1.0	1.0	2.0	0.0171
	9	1.0	1.0	4.0	0.0148

A. 30 points

By qualitative analysis of the kinetics, is it possible that the reaction is single site, competitive adsorption, and what conditions of coverage of each species (e.g, high, intermediate, or low coverage of A?, of B?, of C?) is consistent with the qualitative aspects of the data?

B. 20 points

Find constants to go in a suitable rate expression.