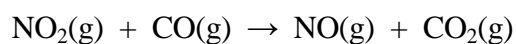


Marks
7

- The major pollutants NO(g), CO(g), NO₂(g) and CO₂(g) are emitted by cars and can react according to the following equation.



The following rate data were collected at 225 °C.

Experiment	[NO ₂] ₀ (M)	[CO] ₀ (M)	Initial rate (d[NO ₂]/dt, M s ⁻¹)
1	0.263	0.826	1.44 × 10 ⁻⁵
2	0.263	0.413	1.44 × 10 ⁻⁵
3	0.526	0.413	5.76 × 10 ⁻⁵

Determine the rate law for the reaction.

Calculate the value of the rate constant at 225 °C.

Answer:

Calculate the rate of appearance of CO₂ when [NO₂] = [CO] = 0.500 M.

Answer:

Suggest a possible mechanism for the reaction based on the form of the rate law.
Explain your answer.