Answer on Question #37232 – Chemistry – Physical Chemistry

Question :

X + Y → W + Z.   Reactant X contains 199.3 J of chemical energy. Reactant Y contains 272.3 J of chemical energy. Product W contains 41.9 J of chemical energy. If the reaction loses 111.6 J of chemical energy as it produces, how much chemical energy must product Z contain?

Solution:

$$(U_X + U_Y) - (U_W + U_Z) = \Delta U$$

Hence

$$U_Z = U_X + U_Y - U_W - \Delta U$$

$$U_Z = 199.3 + 272.3 - 41.9 - 111.6 = 318.1 \text{ J}$$

Answer:

Product Z must contain 318.1 J of chemical energy.