

$$\begin{array}{l} \overline{\overline{Q}}^+ \\ W \\ E = \\ E_f - \\ E_i = \\ Q : \\ W : \\ V = \\ 0 \end{array}$$

$$\begin{array}{l} E = Q \\ (1) P \\ p^- \\ PV \\ E = \\ Q_p^- \\ (PV_1 - \\ PV_2) = \\ E_2^- \\ E_1^- \\ \overline{\overline{Q}}_p = \\ (E_2 + \\ PV_2) - \\ (E_1 + \\ PV_1) \\ \overline{\overline{E}}^+ \\ PV \\ ?? \\ H_1^- \\ H = \\ (E_2 + \\ PV_2) - \\ (E_1 + \\ PV_1) \\ \overrightarrow{\overline{H}} = \\ Q_p \end{array}$$

$$H_{0 \rightarrow}$$

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$$(2) \quad A+B \rightarrow XH = H_1$$

$$(3) \quad C+D \rightarrow YH = H_2$$

$$(4) \quad \text{????}$$

$$(5) \quad A+B+C+D \rightarrow X+YH = H_1+H_2$$

$$(6) \quad \text{??}$$

$$(6) \quad A+B+C+D \rightarrow ZH = H_1+H_2$$

$$H_1^\circ H_2^\circ$$

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$$Na_{(g)} \rightarrow Na_{(g)}^+ + e^- \quad H_1^\circ = 120.04 \text{ kcal}$$

$$Cl_{(g)} + e^- \rightarrow Cl_{(g)}^- \quad H^\circ = -87.90 \text{ kcal}$$

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$$Al_{(g)}^{3+} + 3Cl_{(g)}^- \rightarrow AlCl_3 \quad H = -1302.6 \text{ kcal}$$

$$Al_{(g)}^{3+} + H_2O + Al_{(aq)}^{3+} \quad H = 1438.0 \text{ kcal}$$

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