

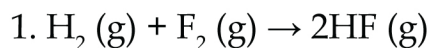
Name : Date :

Bond Energy Worksheet

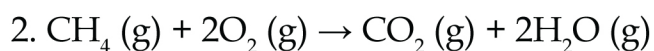
We have provided a list of average bond enthalpies for the following bonds.

Bond	Energy (kJ/mol)
H-H	432
F-F	154
H-F	565
C-H	413
O=O	495
C=O	799
C≡O	1072
C-O	358
O-H	467

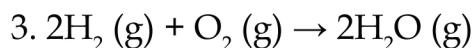
Use this data to calculate the change in enthalpy in the following reactions.



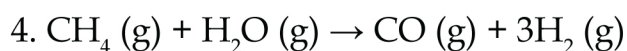
$\Delta\text{H} =$



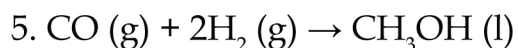
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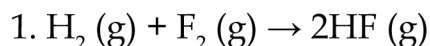
Bond Energy Worksheet

Answers

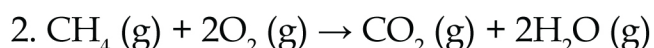
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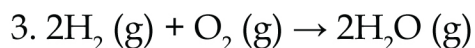
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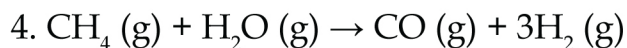
$$\Delta H = [(432+154)-(2 \times 565)] \text{ kJ/mol} = -544 \text{ kJ/mol}$$



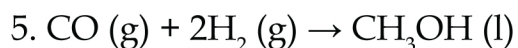
$$\Delta H = [(4 \times 413) + (2 \times 495) - (2 \times 799) - 2 \times (2 \times 467)] \text{ kJ/mol} = [1652 + 990 - 1598 - 1868] \text{ kJ/mol} \\ = -824 \text{ kJ/mol}$$



$$\Delta H = [(2 \times 432) + 495 - 2 \times (2 \times 467)] \text{ kJ/mol} = [864 + 495 - 1868] \text{ kJ/mol} = -509 \text{ kJ/mol}$$



$$\Delta H = [(4 \times 413) + (2 \times 467) - 1072 - (3 \times 432)] \text{ kJ/mol} = [1652 + 934 - 1072 - 1296] \text{ kJ/mol} \\ = 218 \text{ kJ/mol}$$



$$\Delta H = [1072 + (2 \times 432) - \{(3 \times 413) + 358 + 467\}] \text{ kJ/mol} = [1072 + 864 - 1239 - 358 - 467] \text{ kJ/mol} \\ = -128 \text{ kJ/mol}$$