

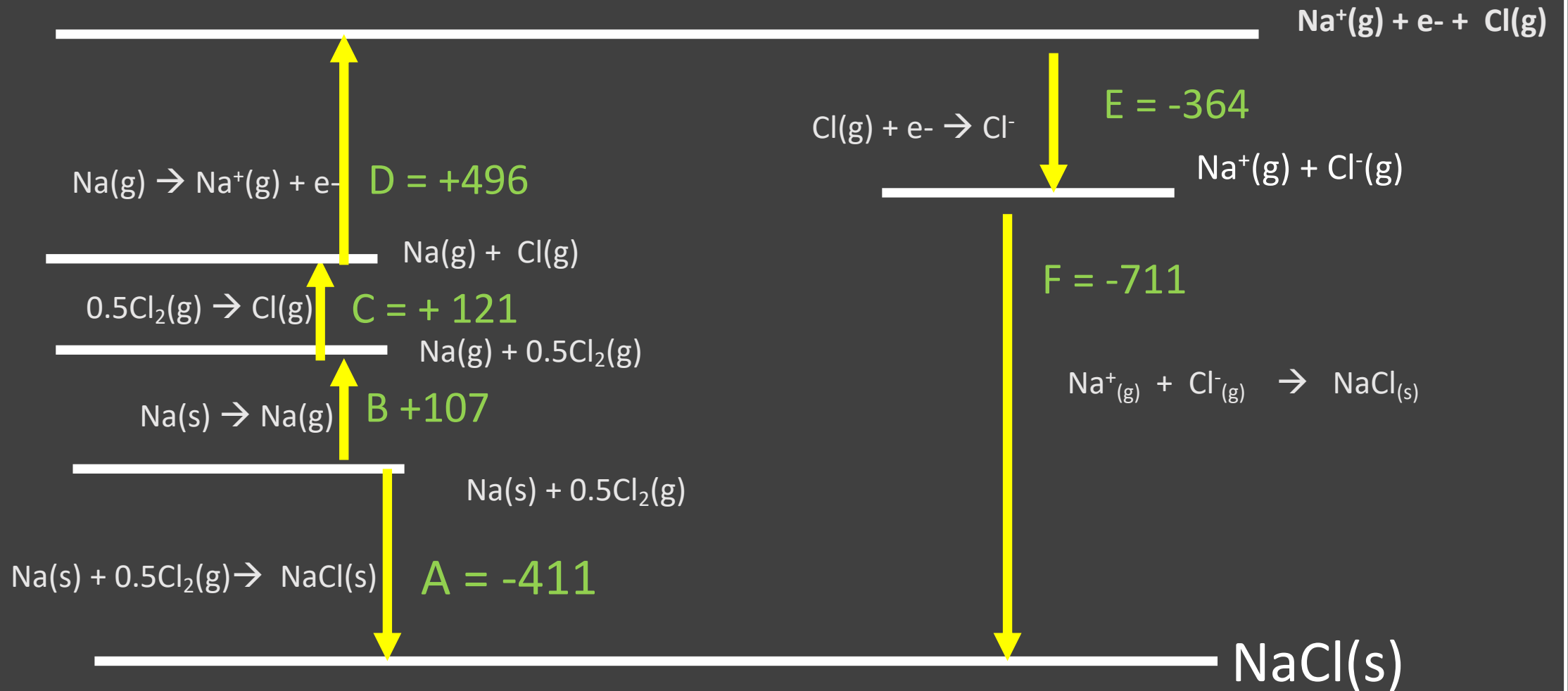


# A2 Physical Chemistry

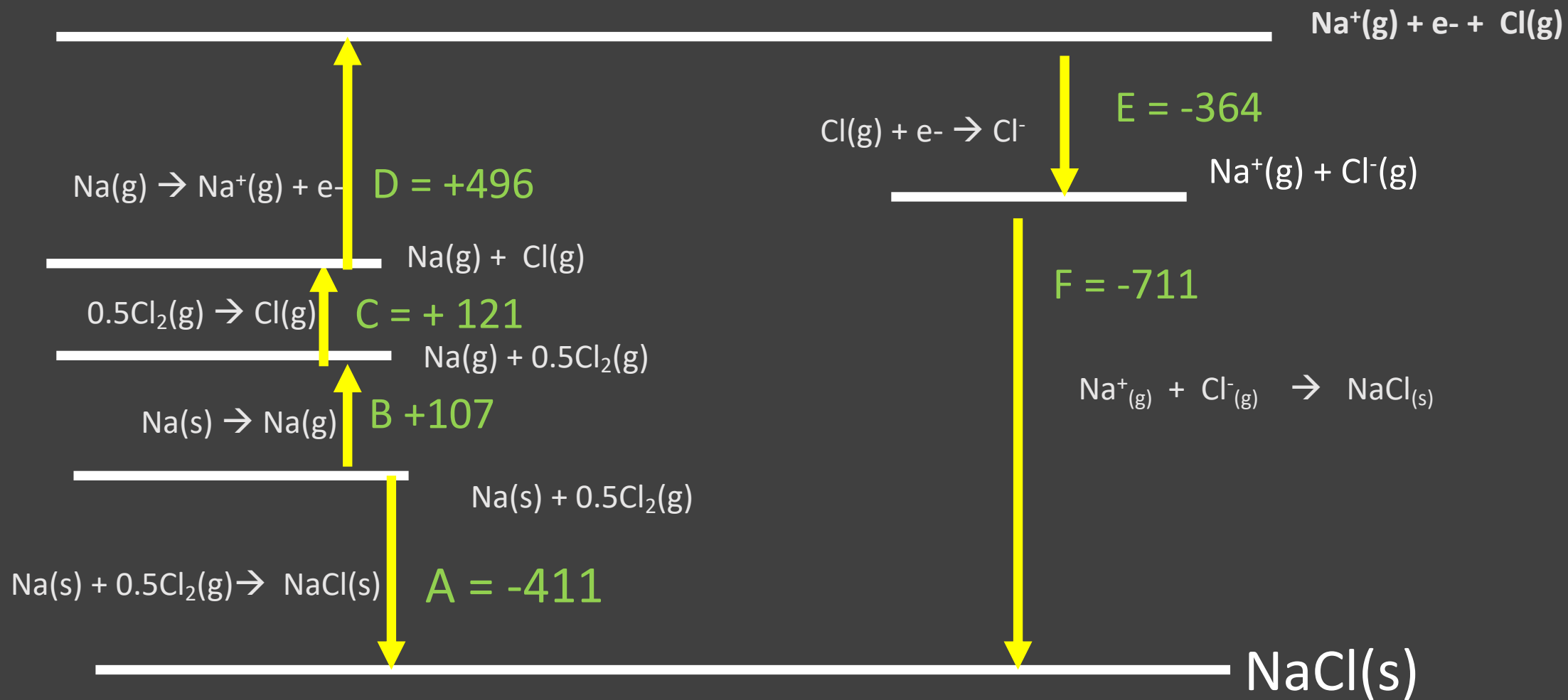
## Lattice Enthalpy

Download slides at [ChemistryTuition.Net](http://ChemistryTuition.Net)

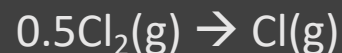
# Lattice Enthalpy of Sodium Chloride



# How can this be modified for MgO?

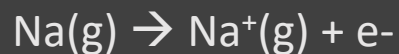


**Standard enthalpy change of atomisation** is the enthalpy change when one mole of gaseous atoms is formed from the element in its standard state under standard conditions.



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**First ionization energy** is the energy need to remove one electron from each atom, in a mole of atoms, in the gas phase.



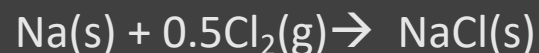
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**Electron Affinity** is the enthalpy change when one electron is added to each atom in one mole of gaseous atoms



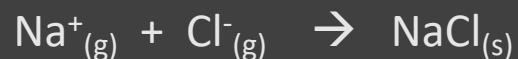
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**Standard Enthalpy change of formation** is the enthalpy change when one mole of a compound is formed from its elements in their standard states under standard conditions.

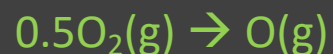


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Lattice Enthalpy of NaCl



**Standard enthalpy change of atomisation** is the enthalpy change when one mole of gaseous atoms is formed from the element in its standard state under standard conditions.



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**First ionization energy** is the energy need to remove one electron from each atom, in a mole of atoms, in the gas phase.



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**Electron Affinity** is the enthalpy change when one electron is added to each atom in one mole of gaseous atoms



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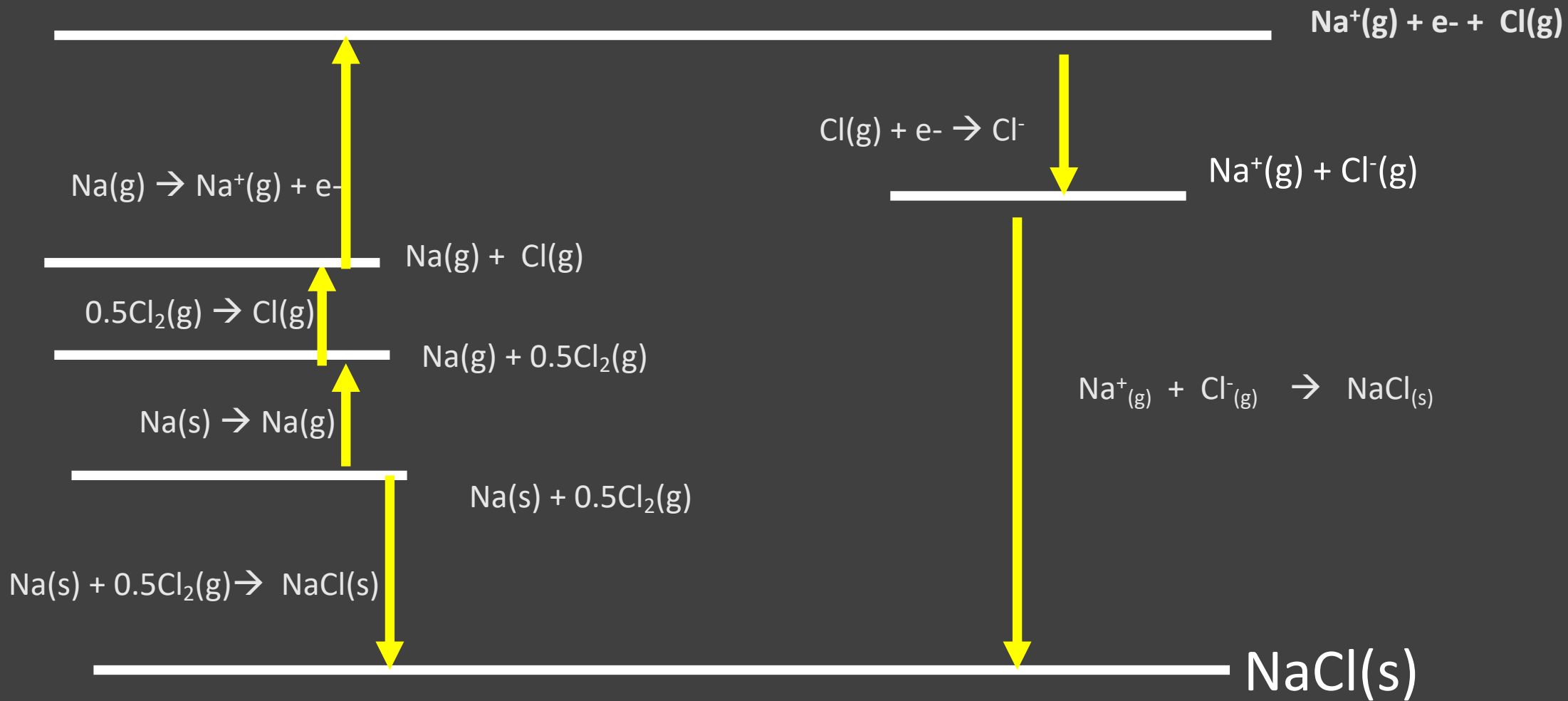
**Standard Enthalpy change of formation** is the enthalpy change when one mole of a compound is formed from its elements in their standard states under standard conditions.

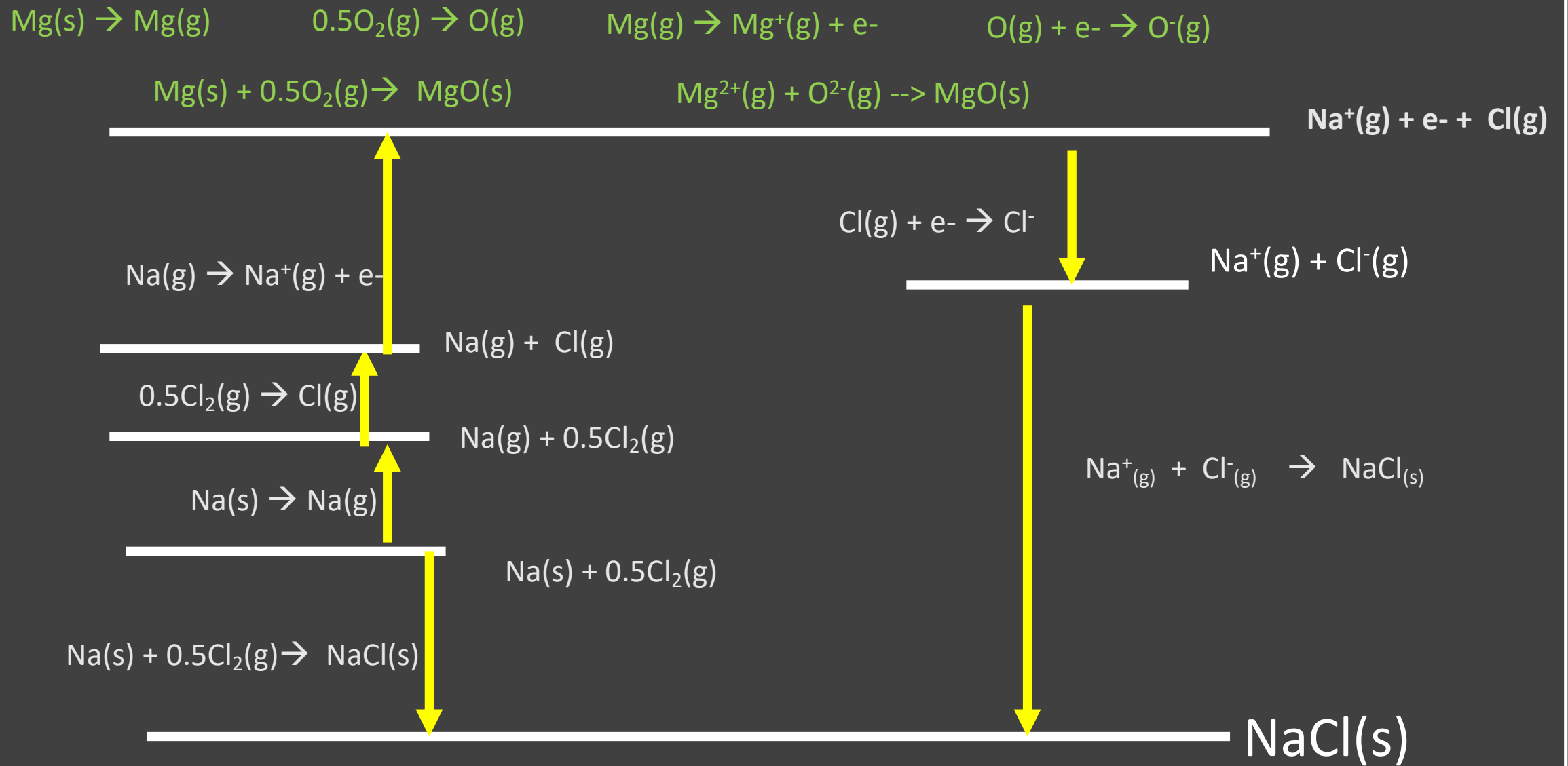


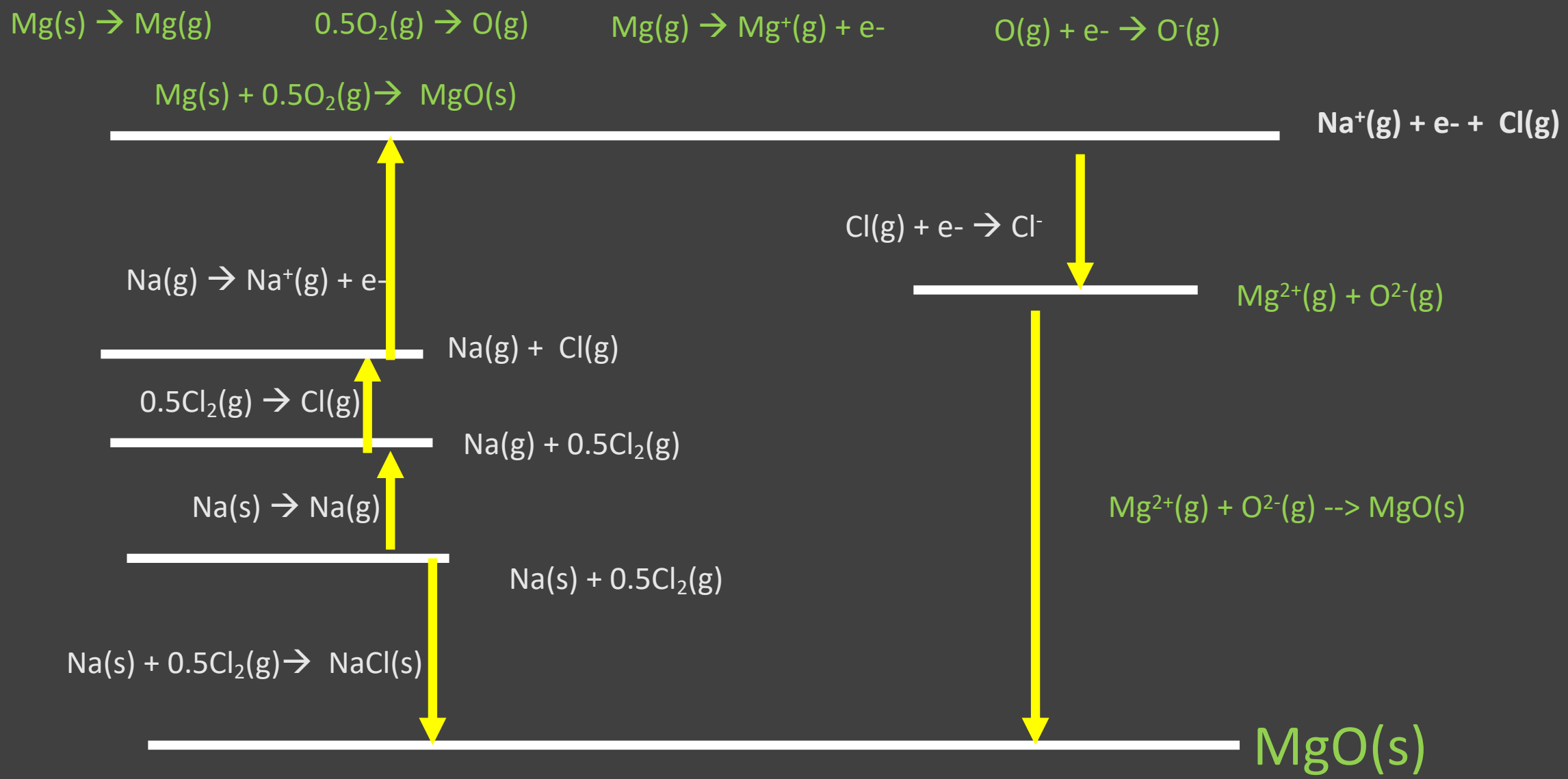
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Lattice Enthalpy of MgO

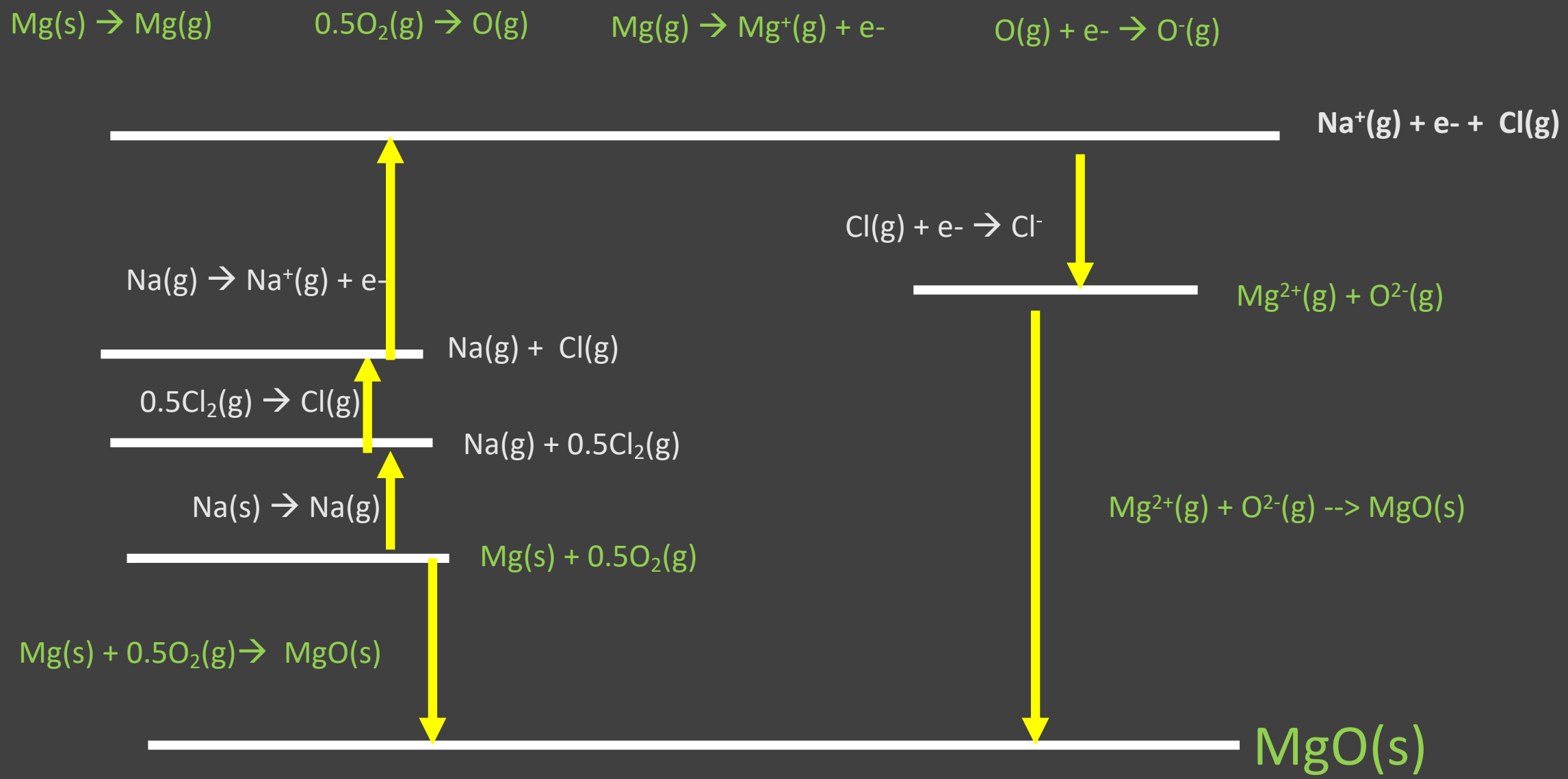


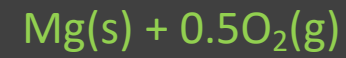
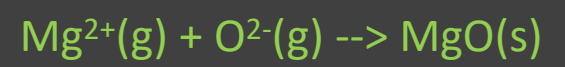
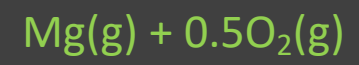
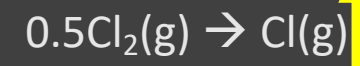
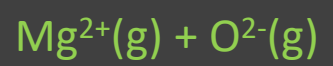
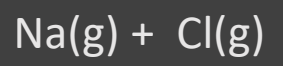
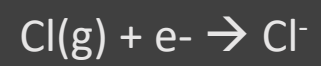
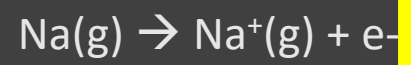
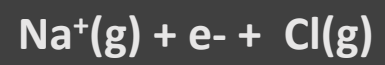
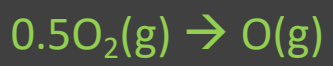


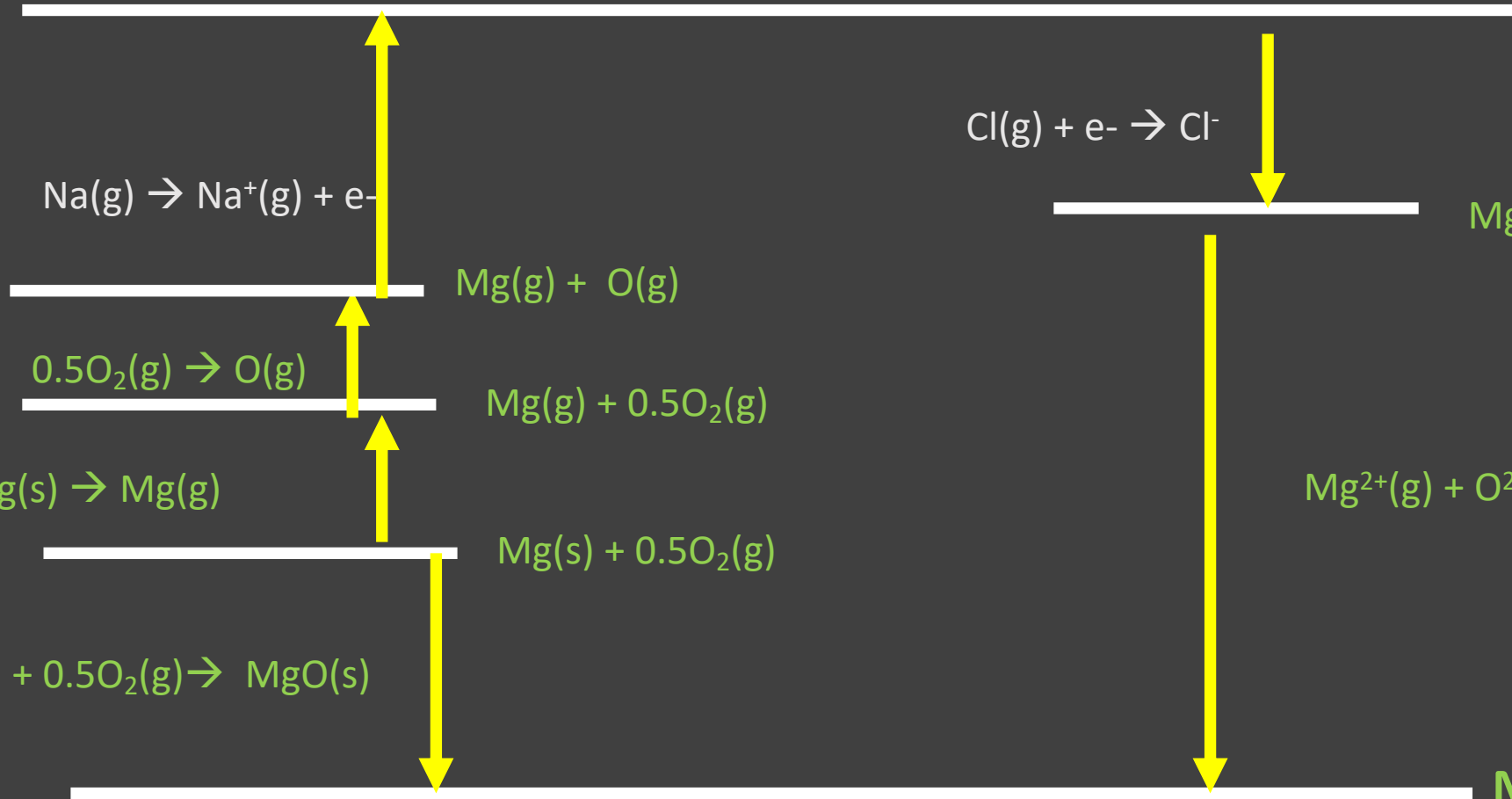
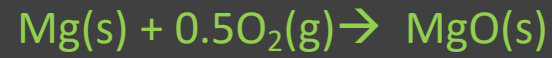
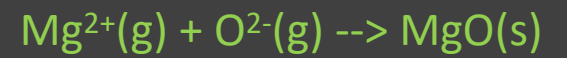
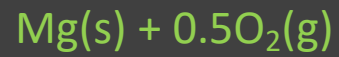
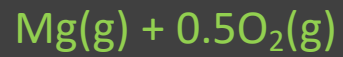
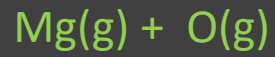
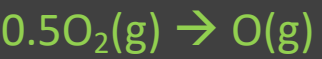
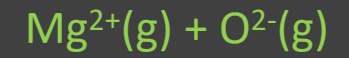
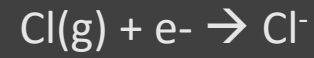
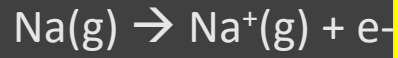
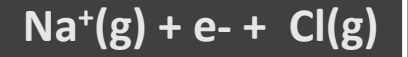


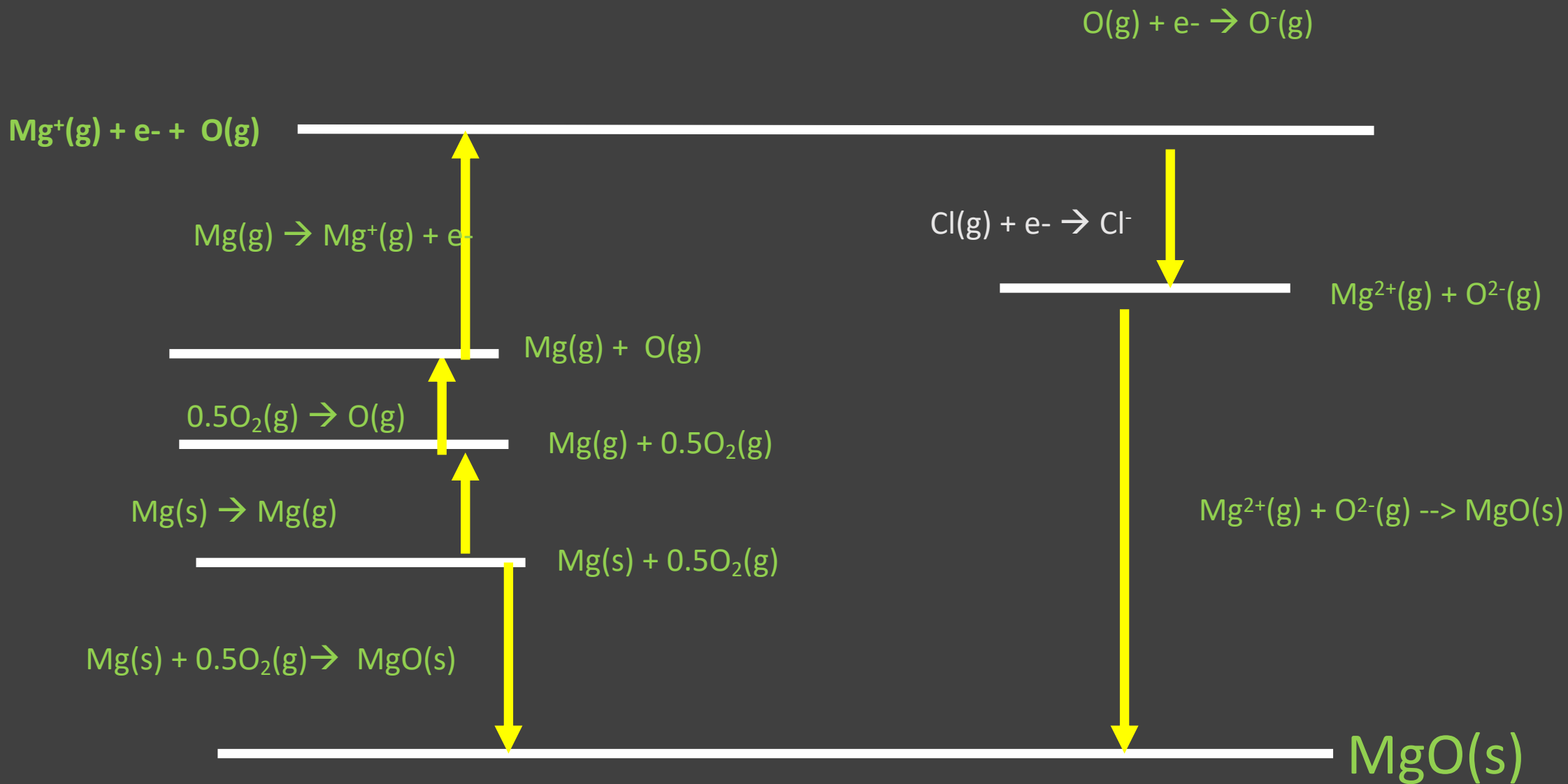


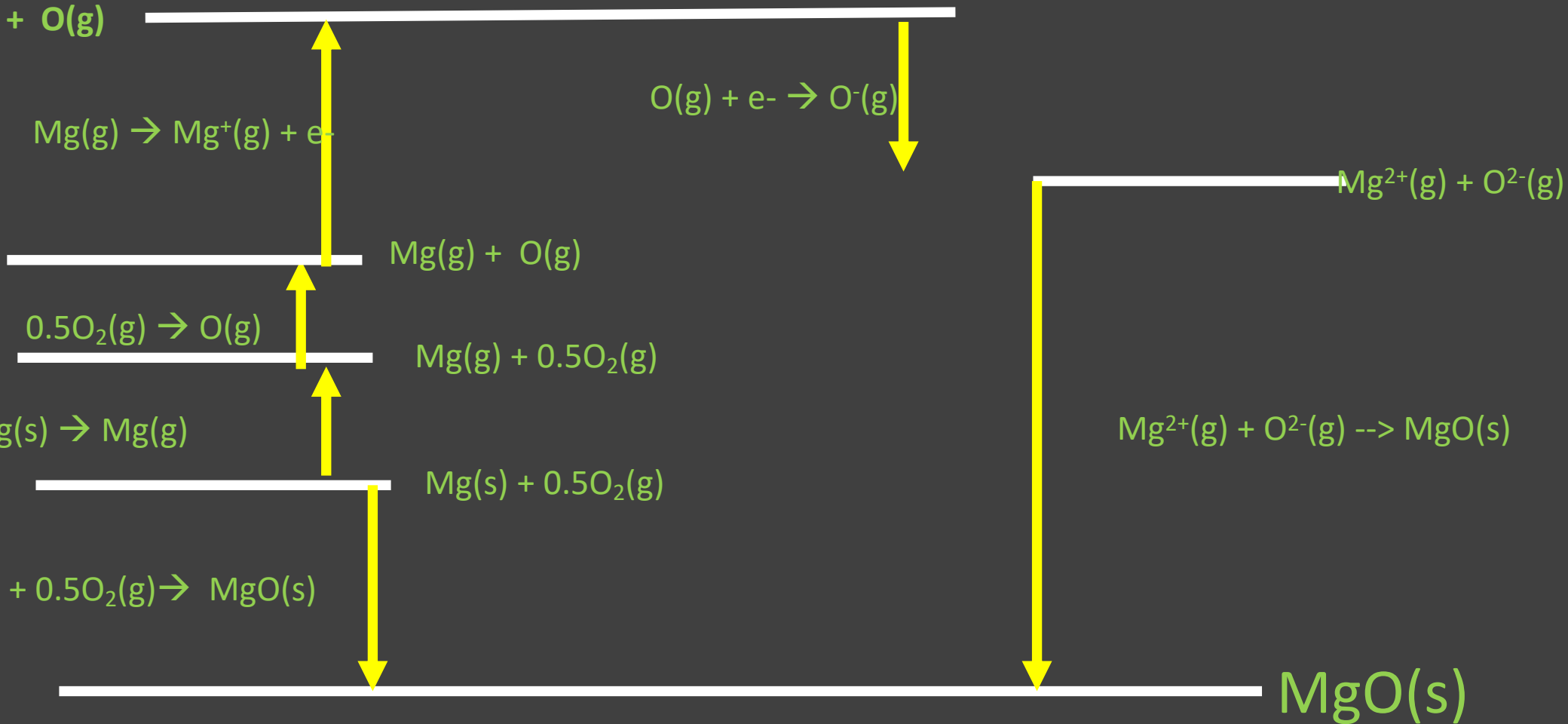
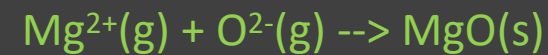
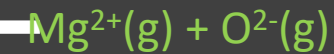
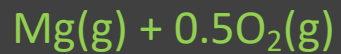
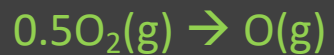


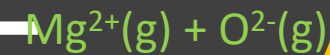
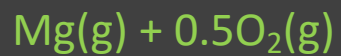
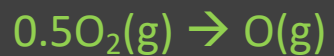


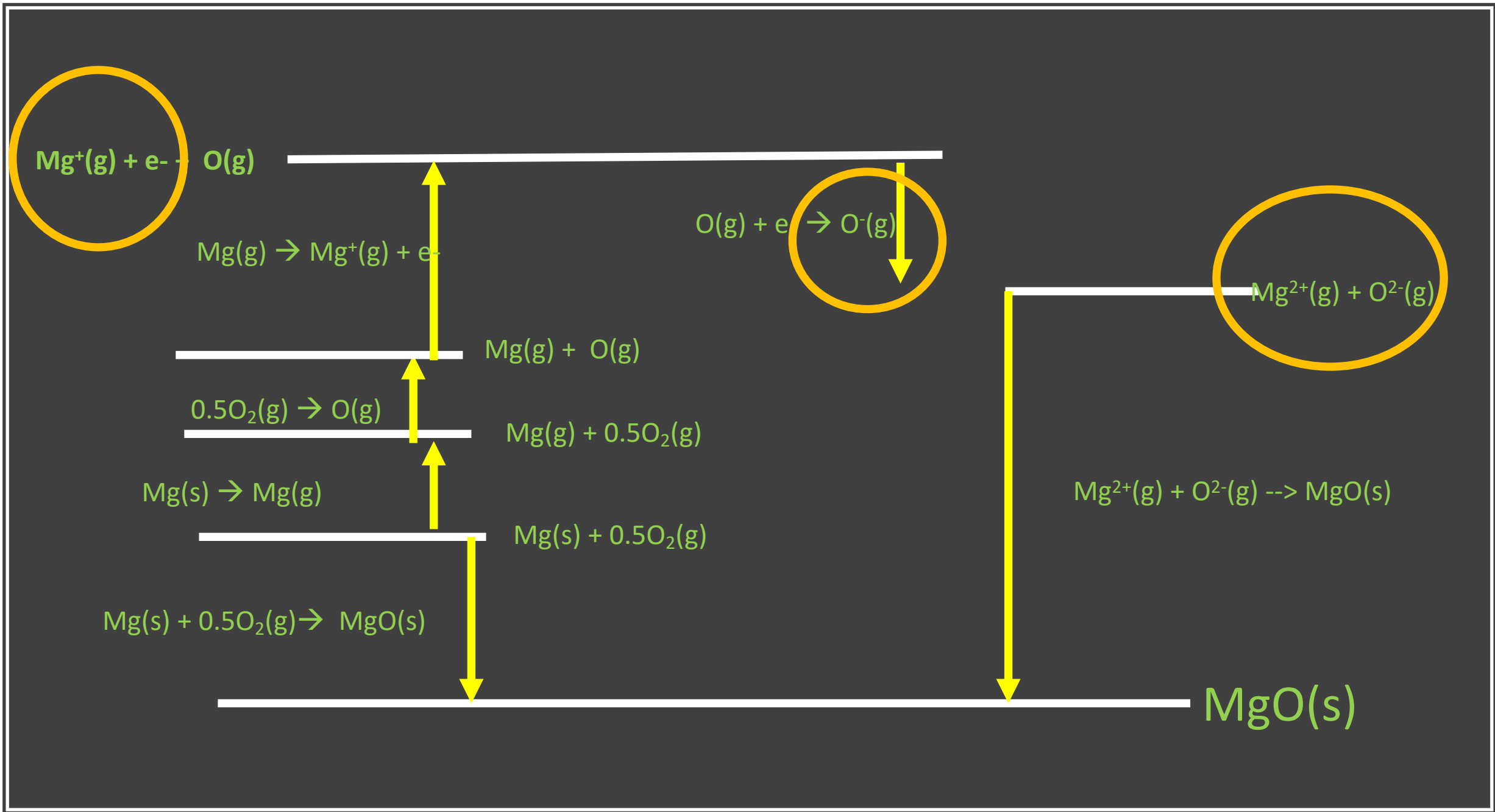












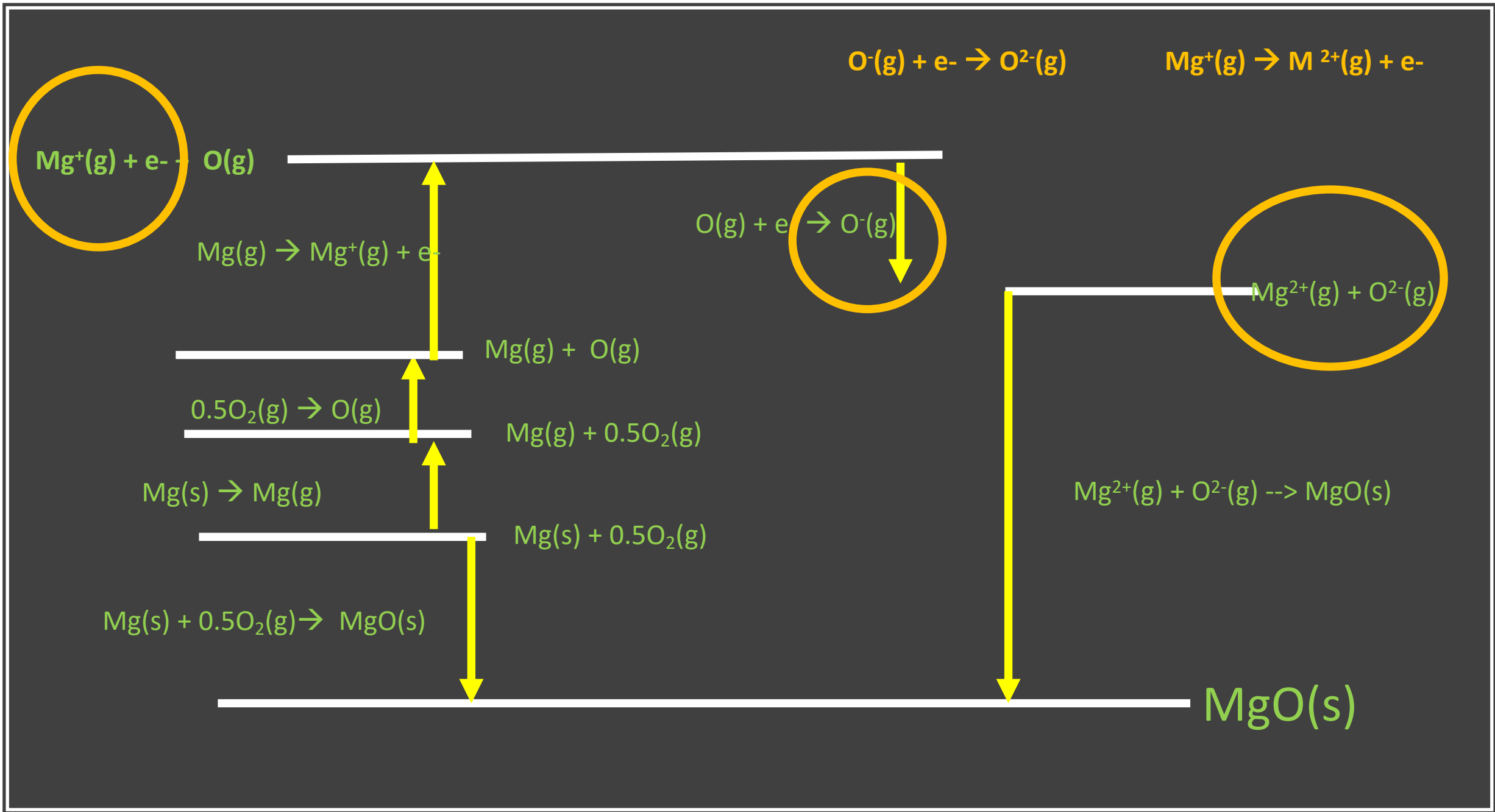
**Second ionization energy** is the energy need to remove one electron from each +1 ion, in a mole of ions, in the gas phase.

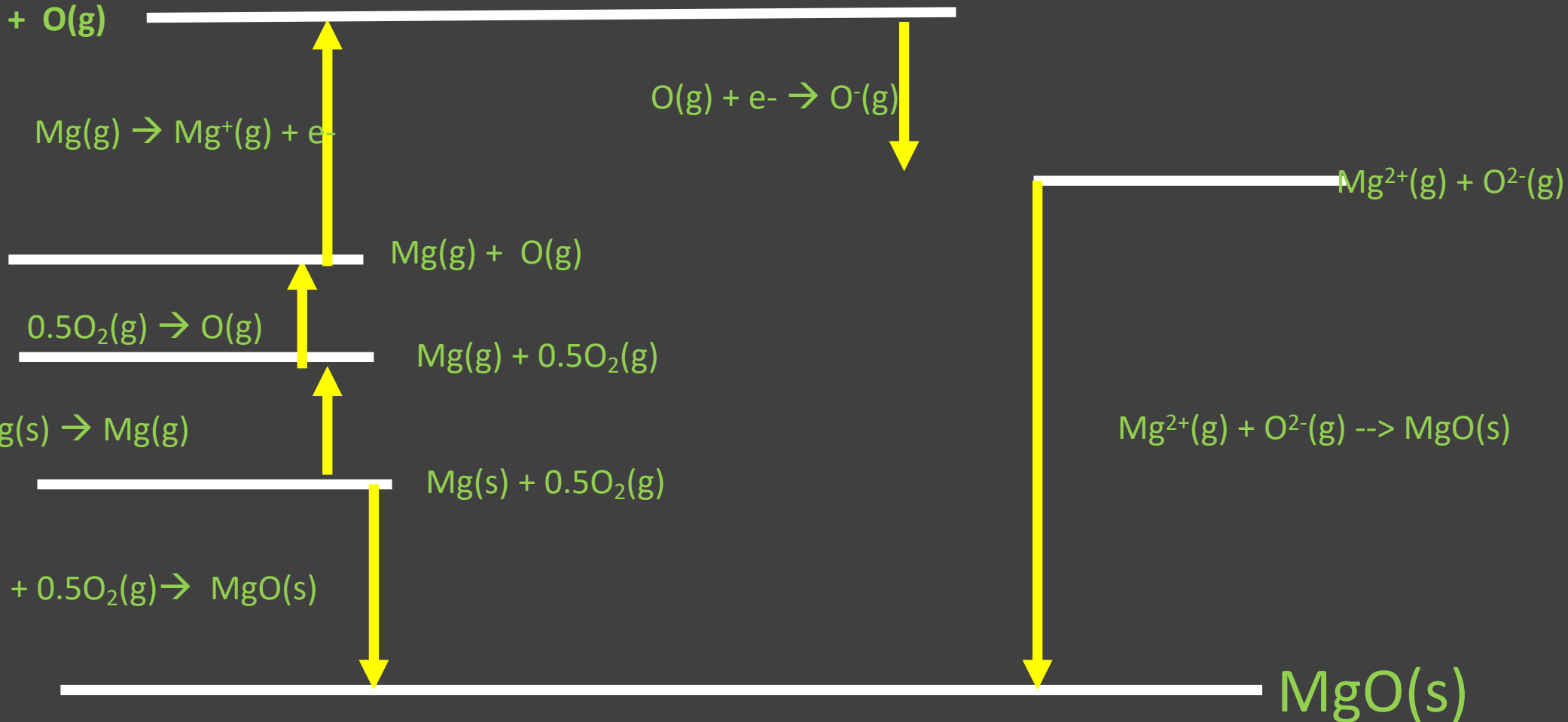
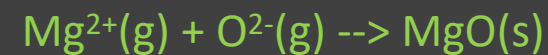
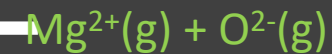
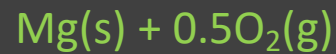
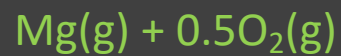
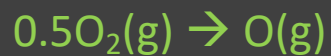


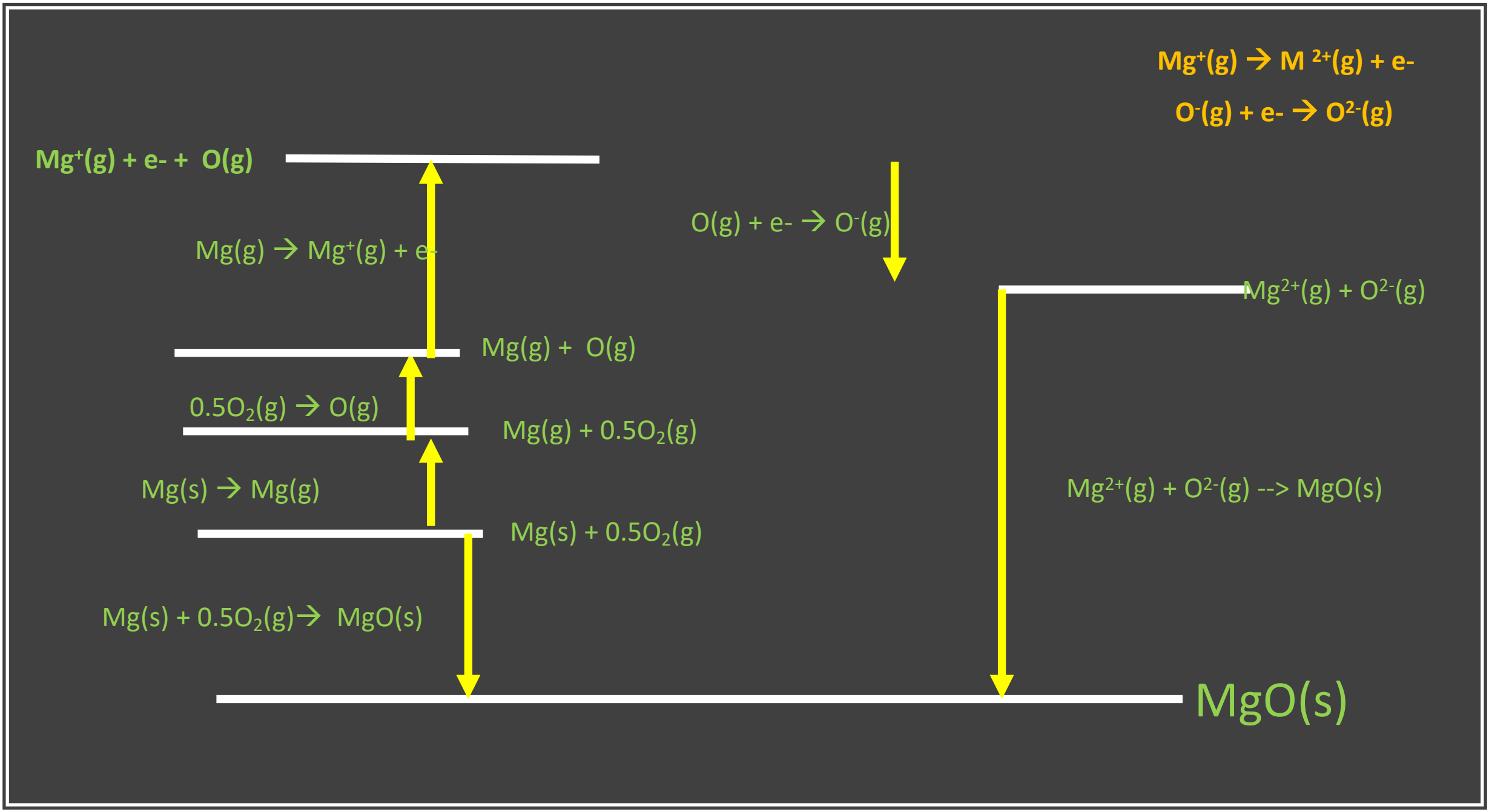
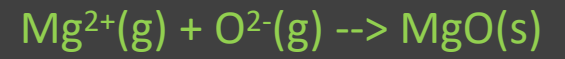
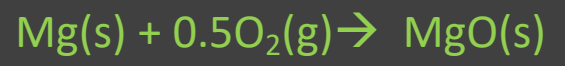
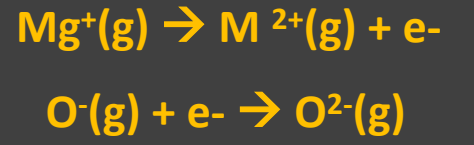
**Electron Affinity** is the enthalpy change when one electron is added to each -1 ion in one mole of gaseous ions

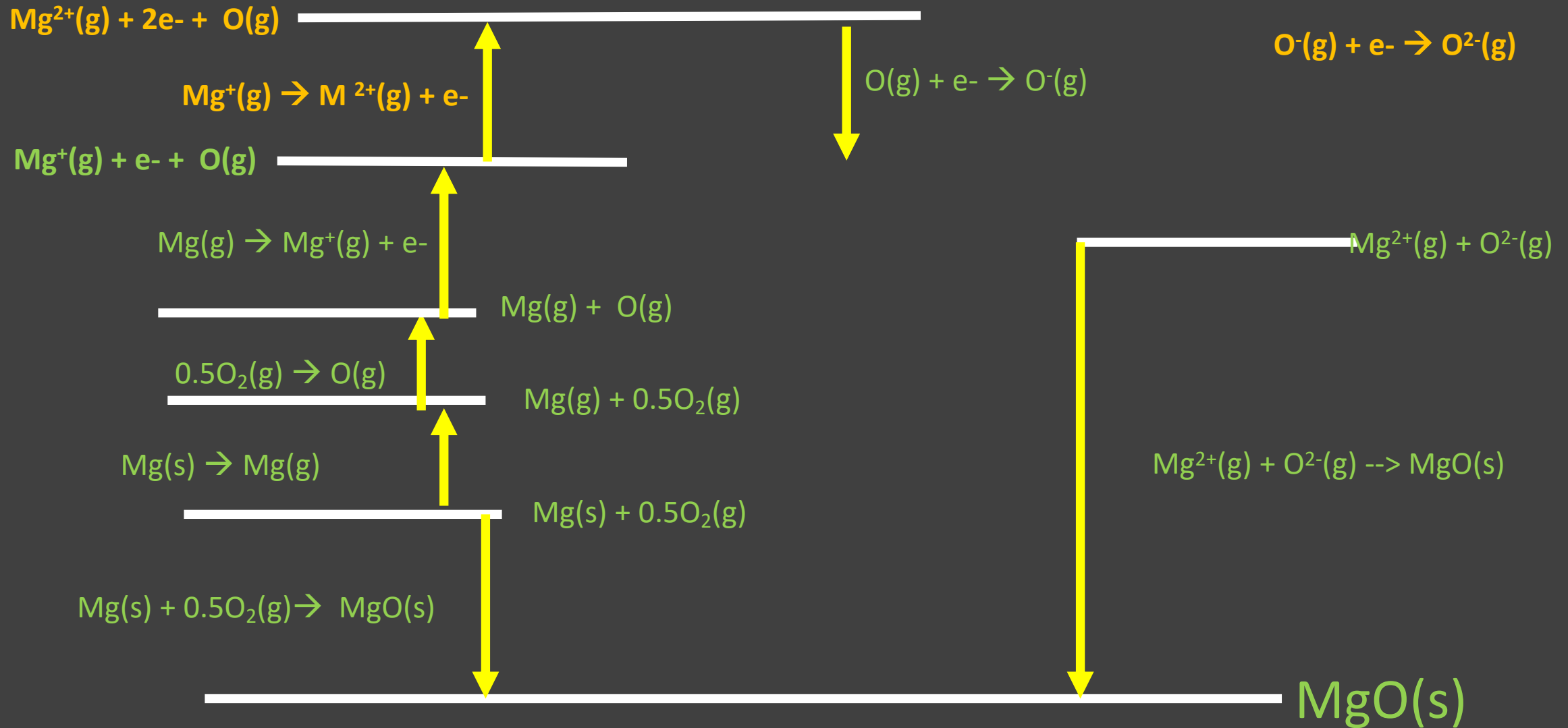


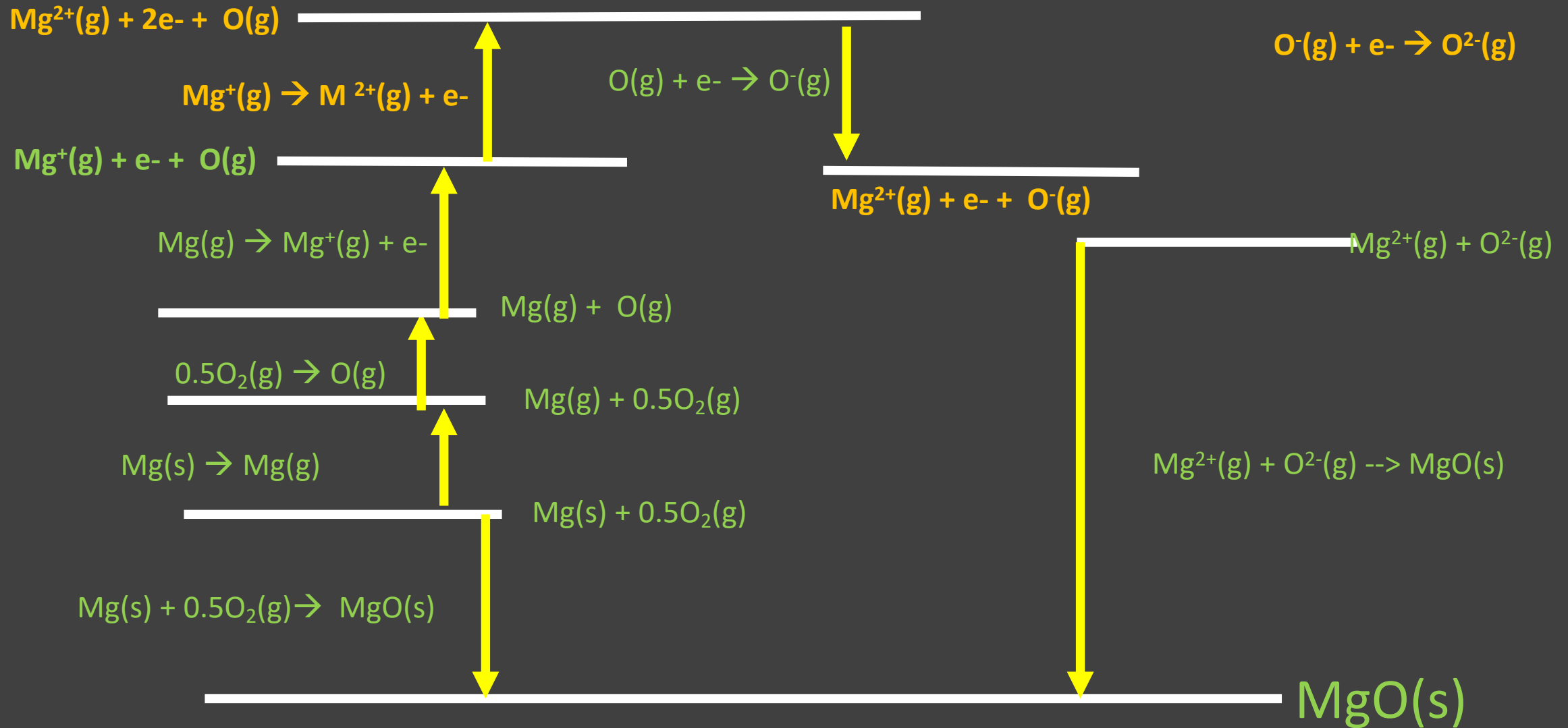


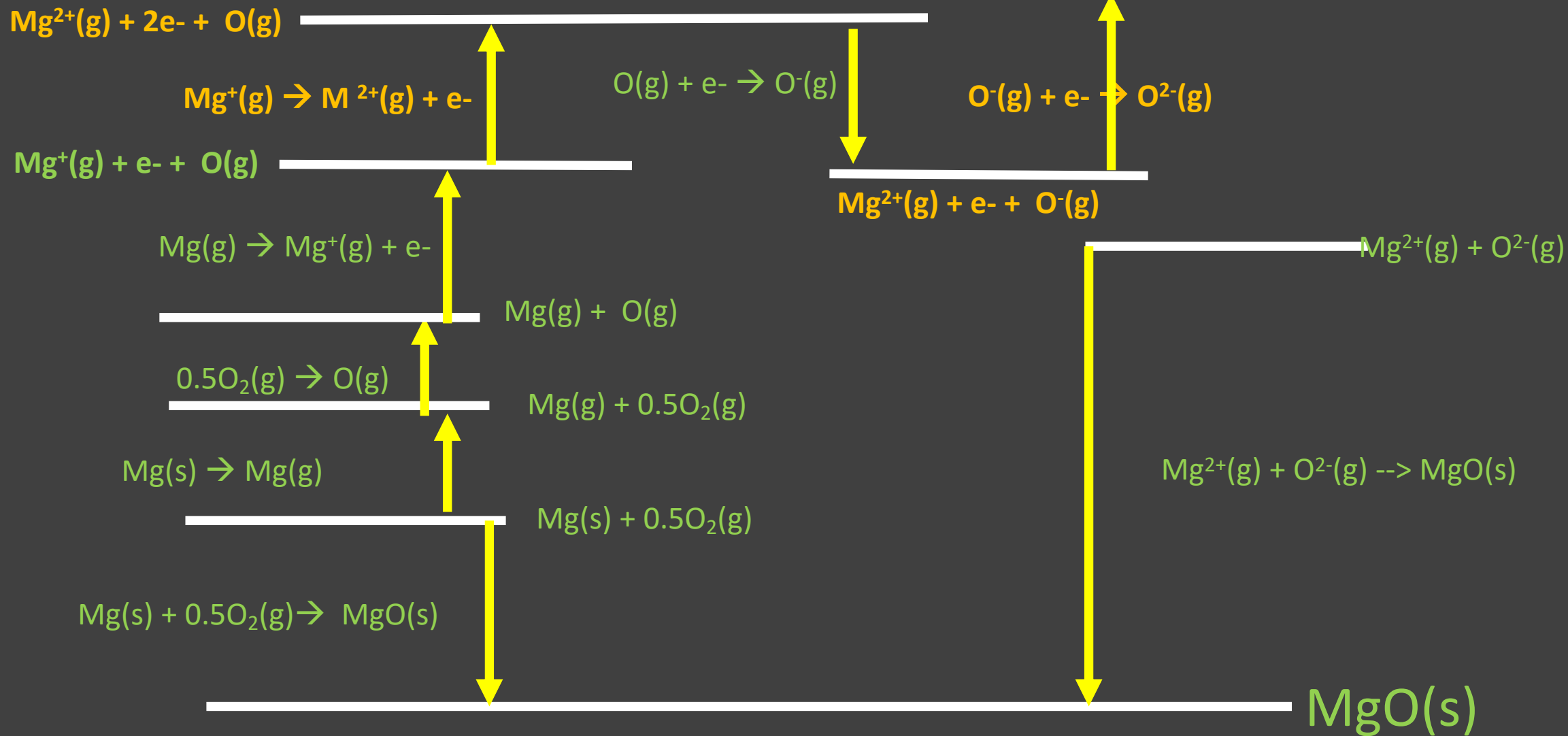


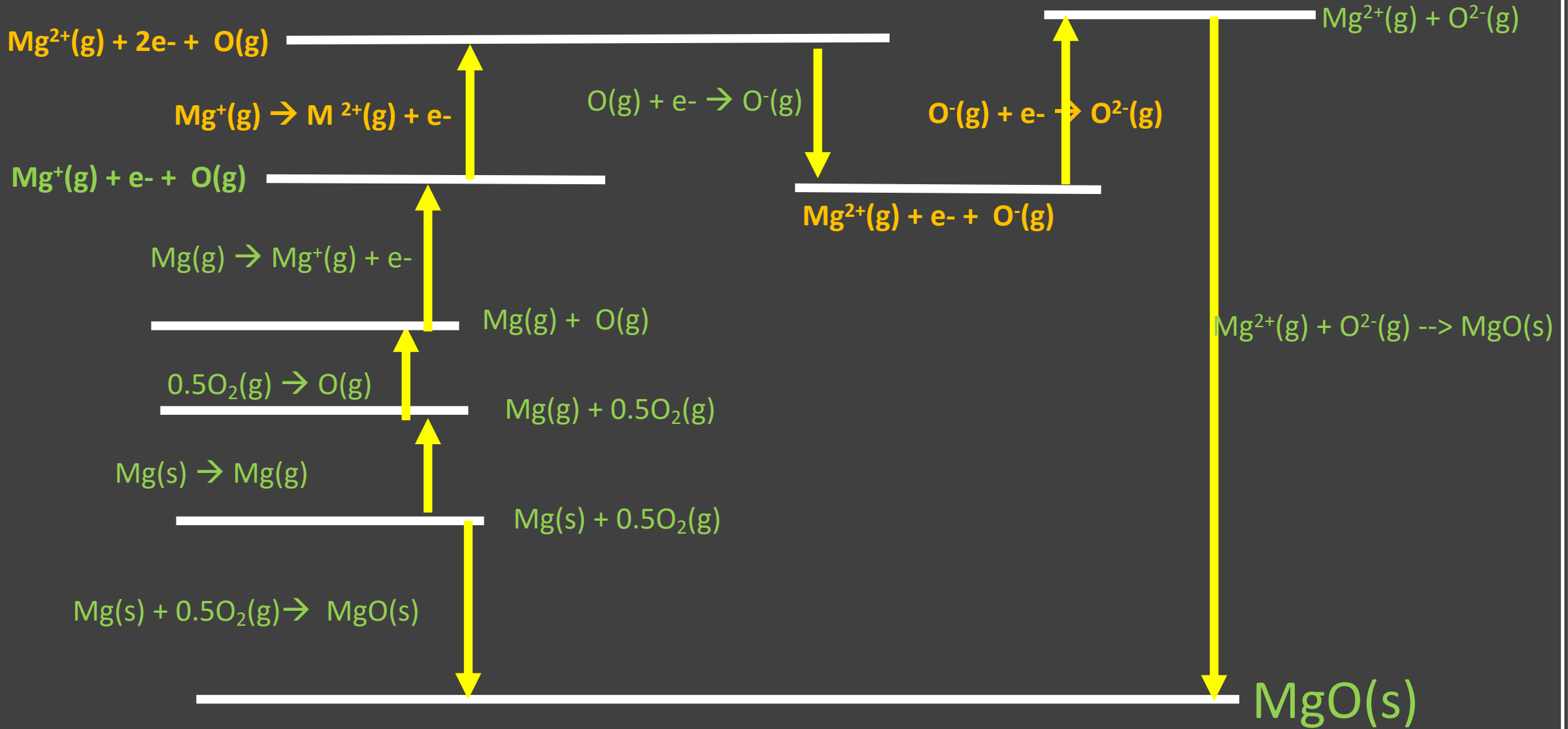


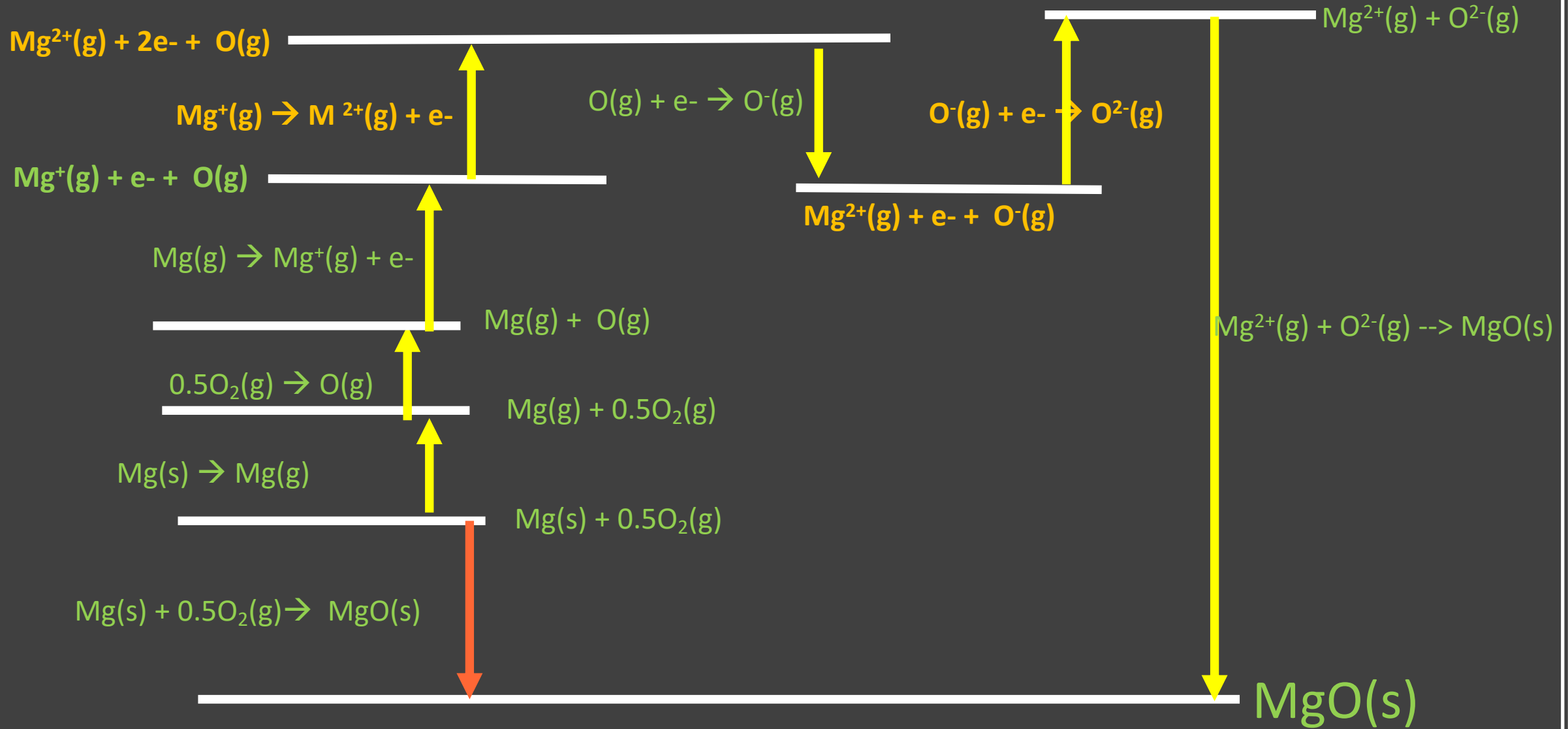




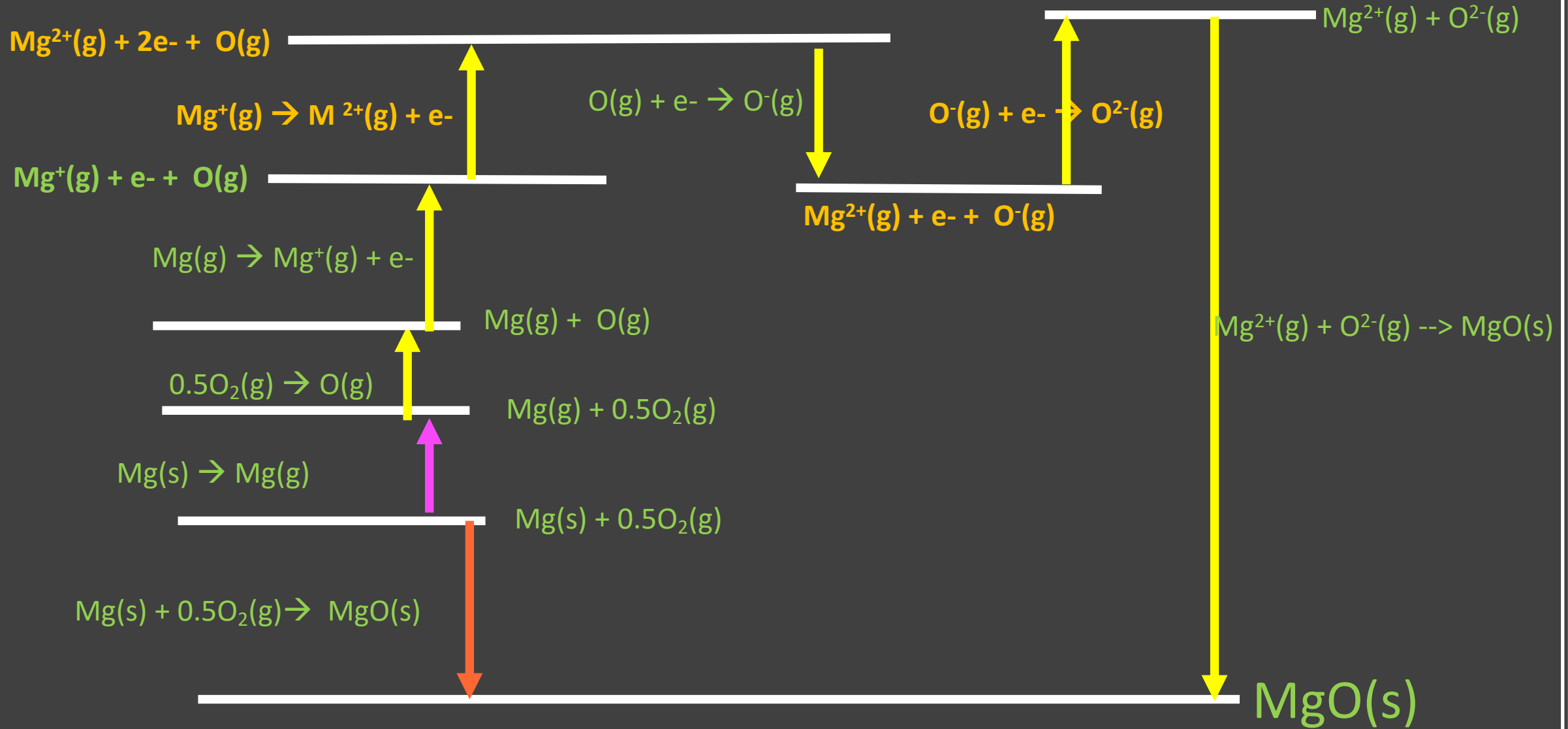


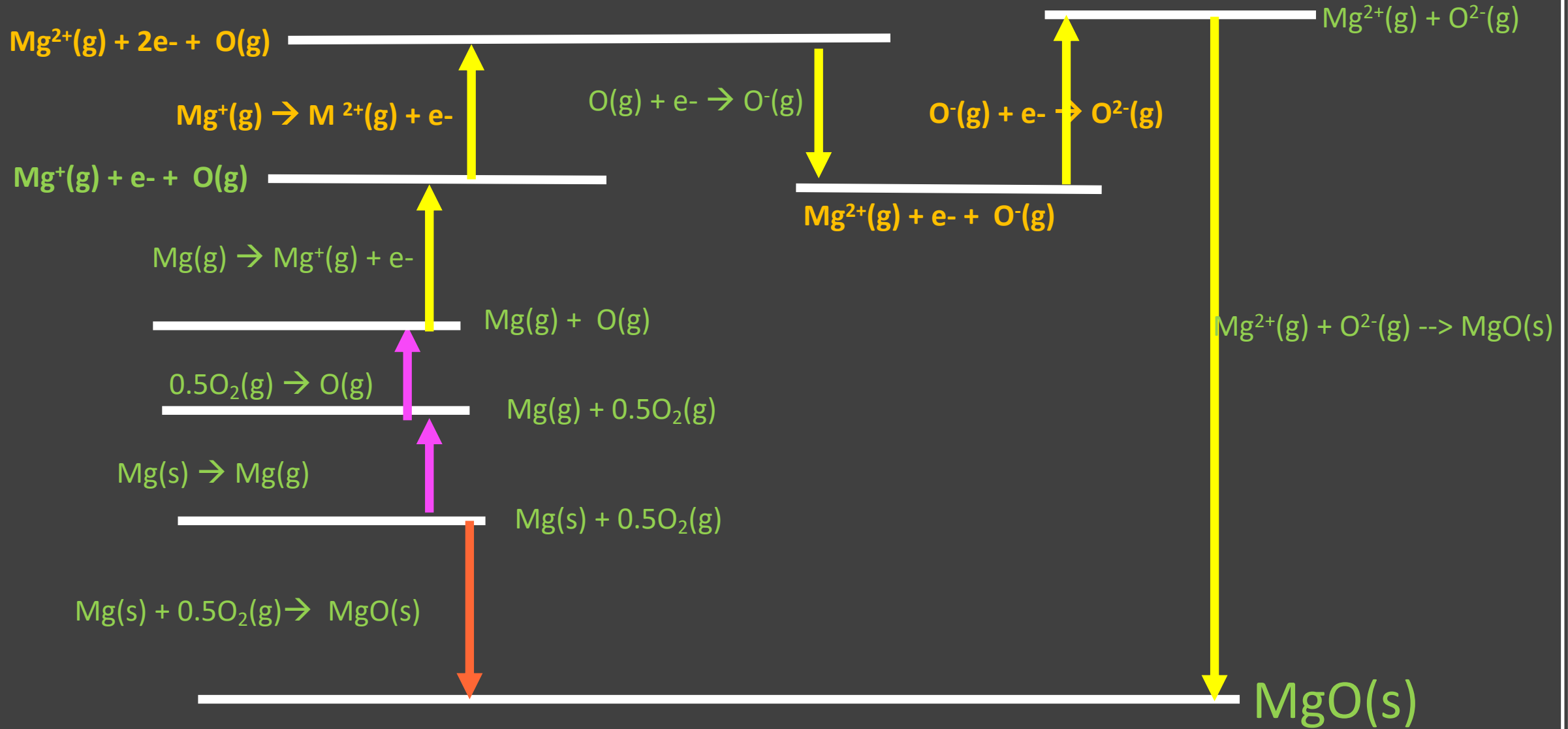


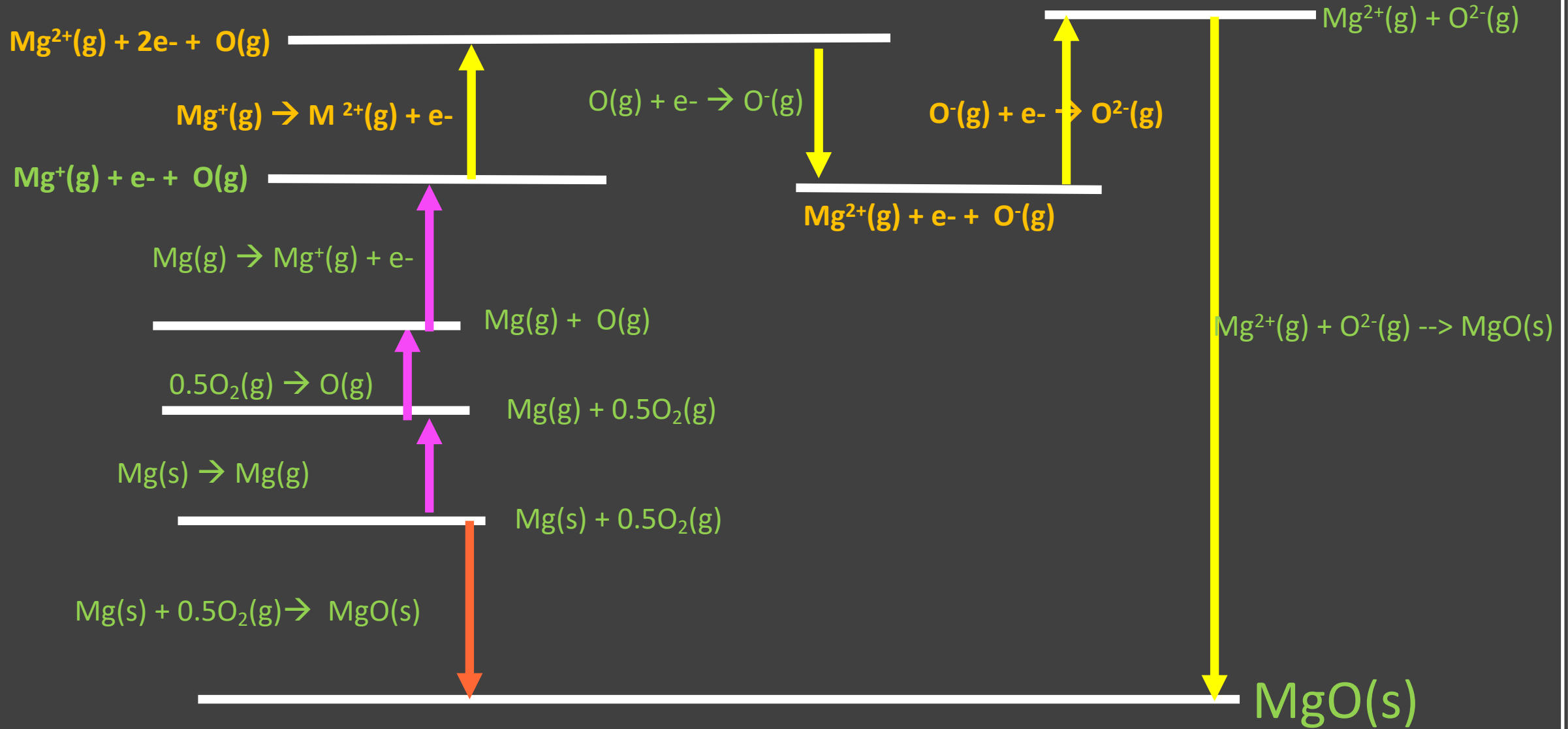


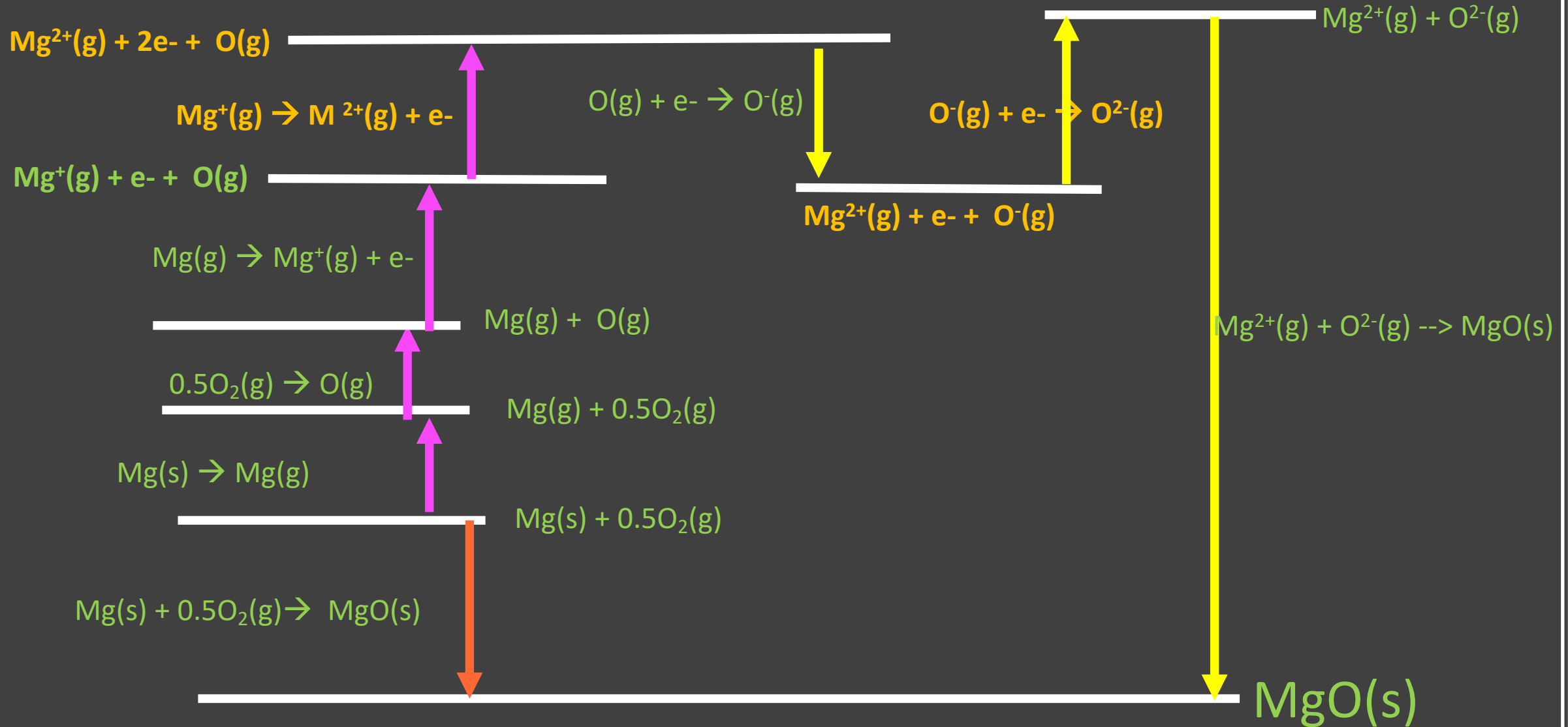


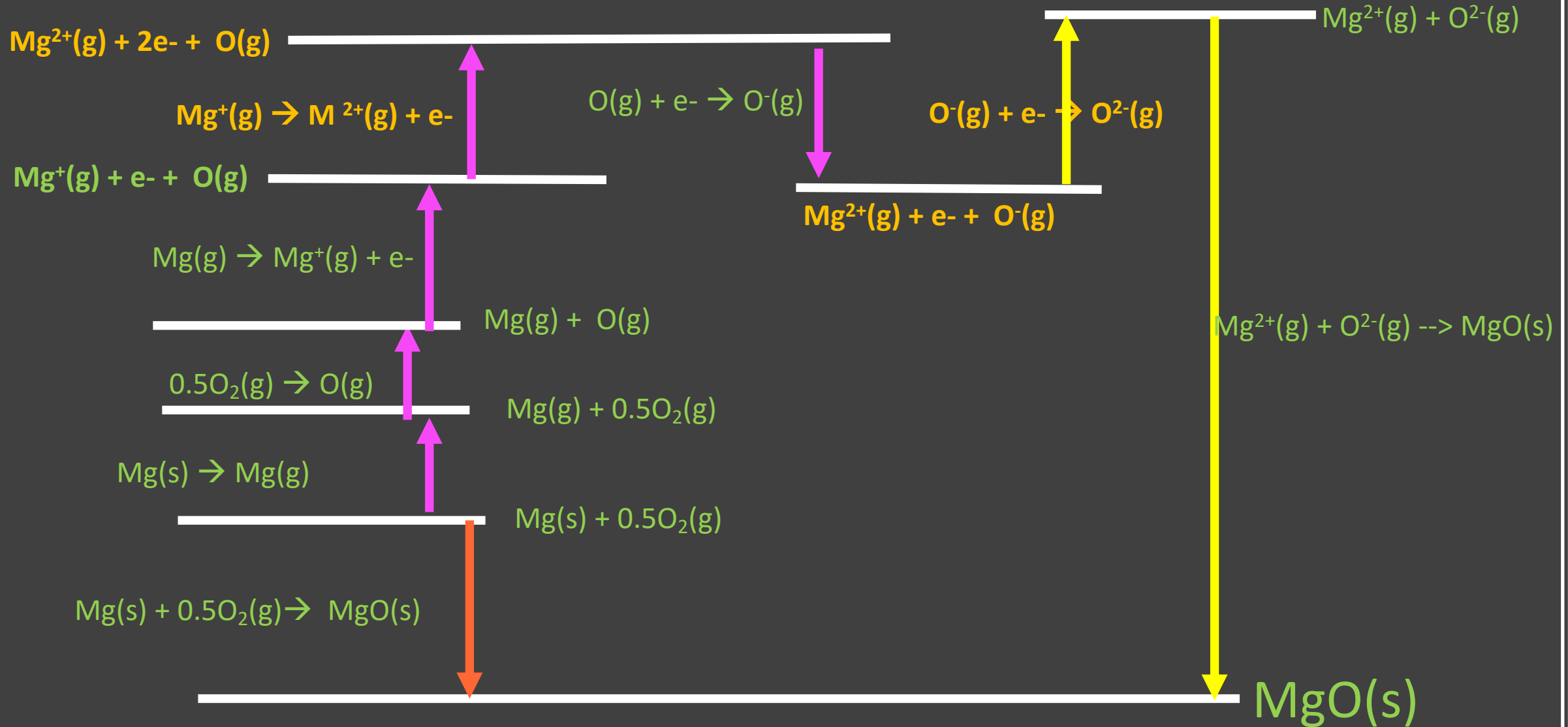


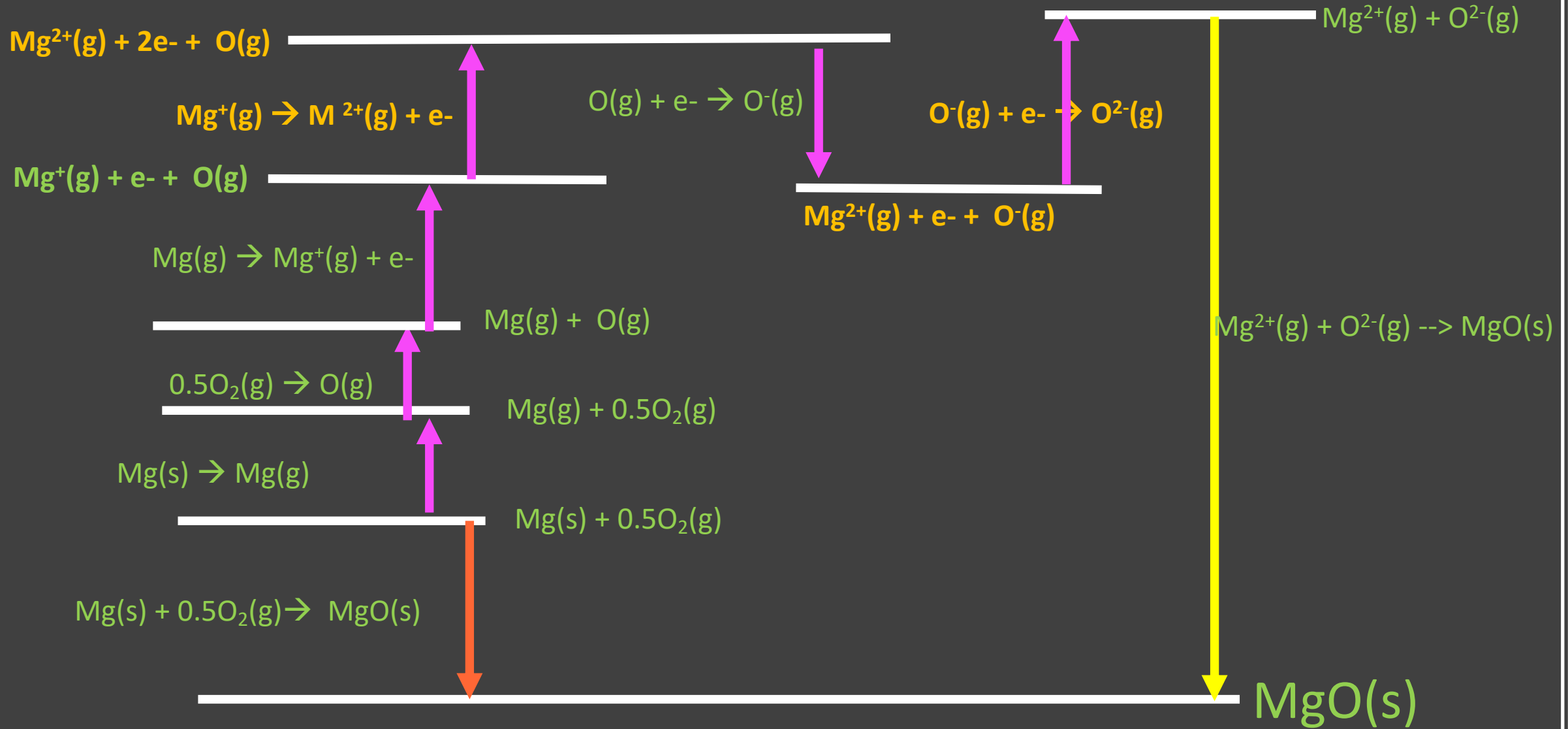


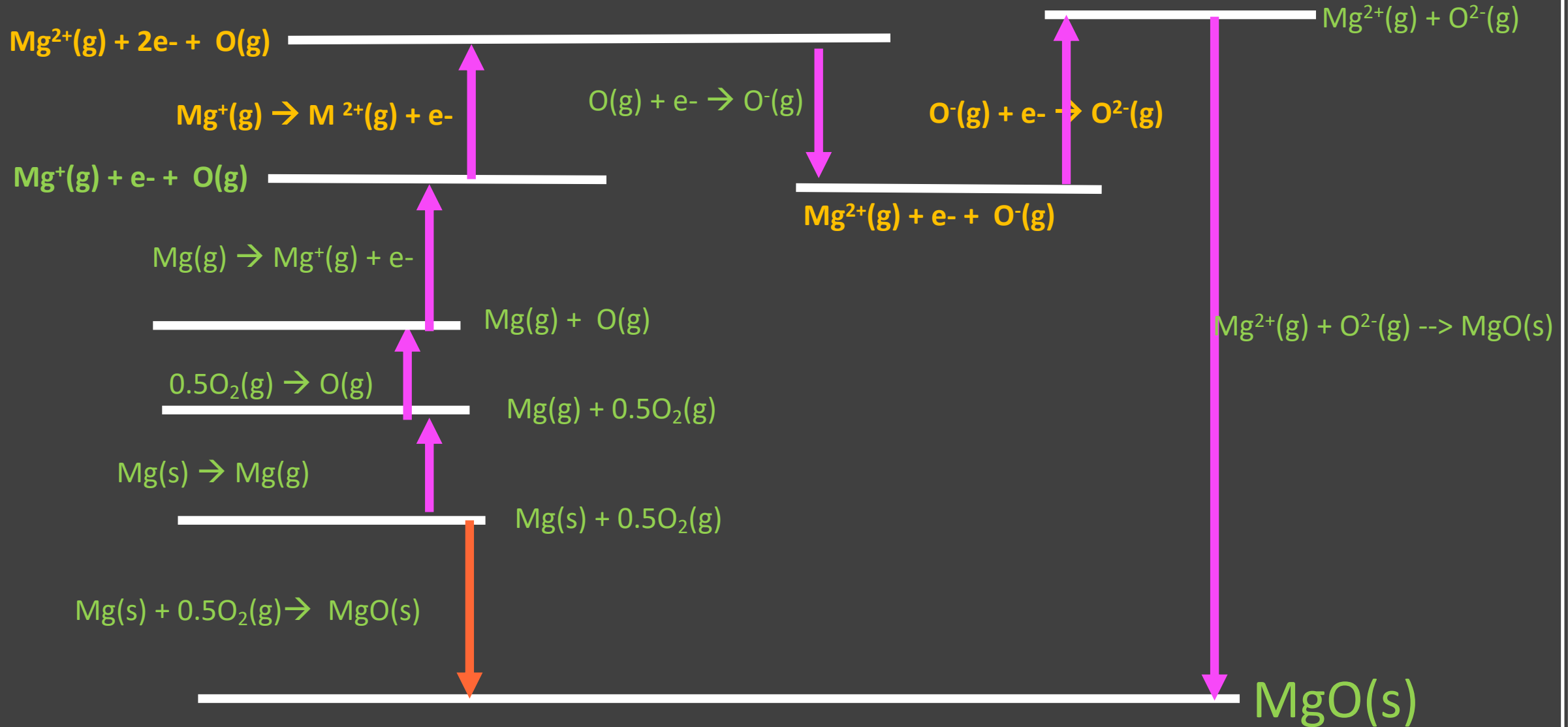


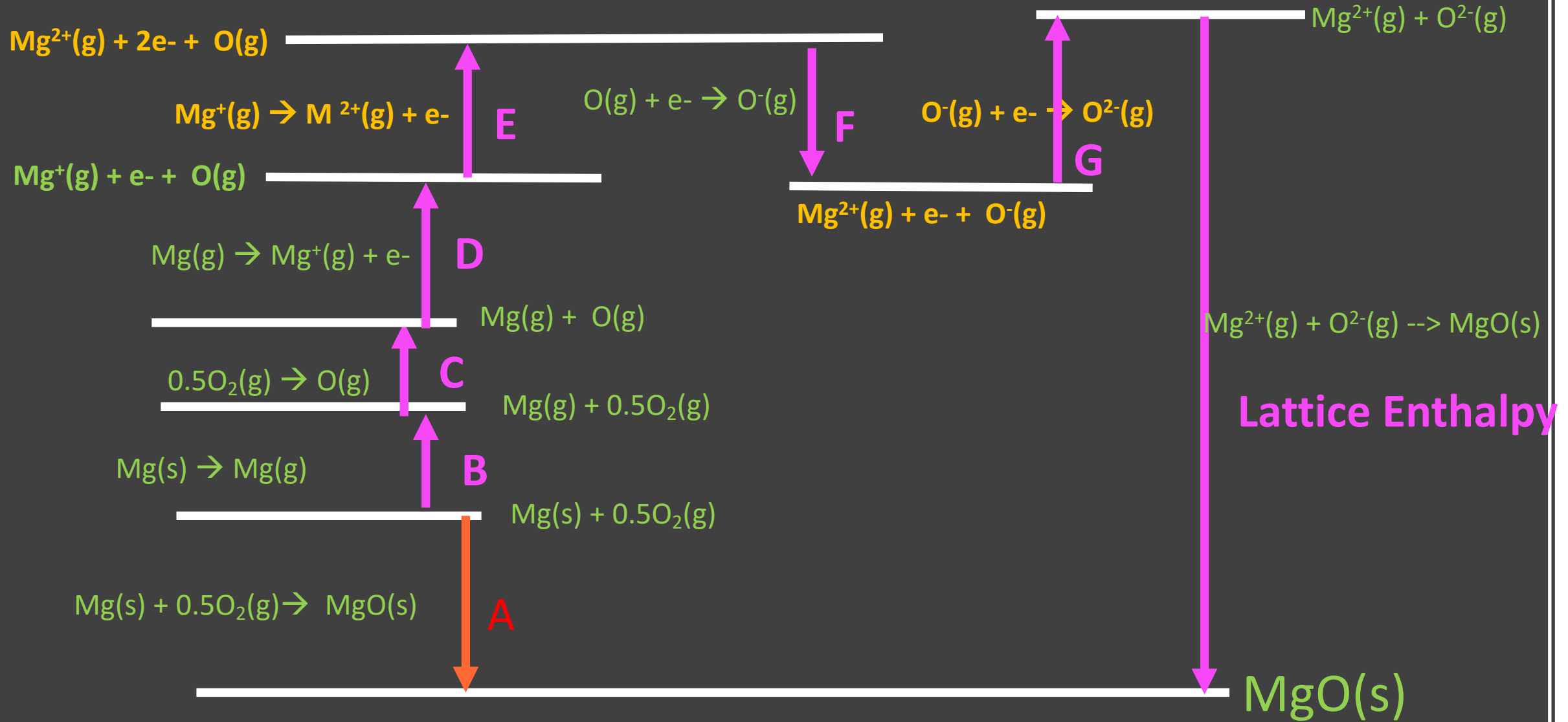




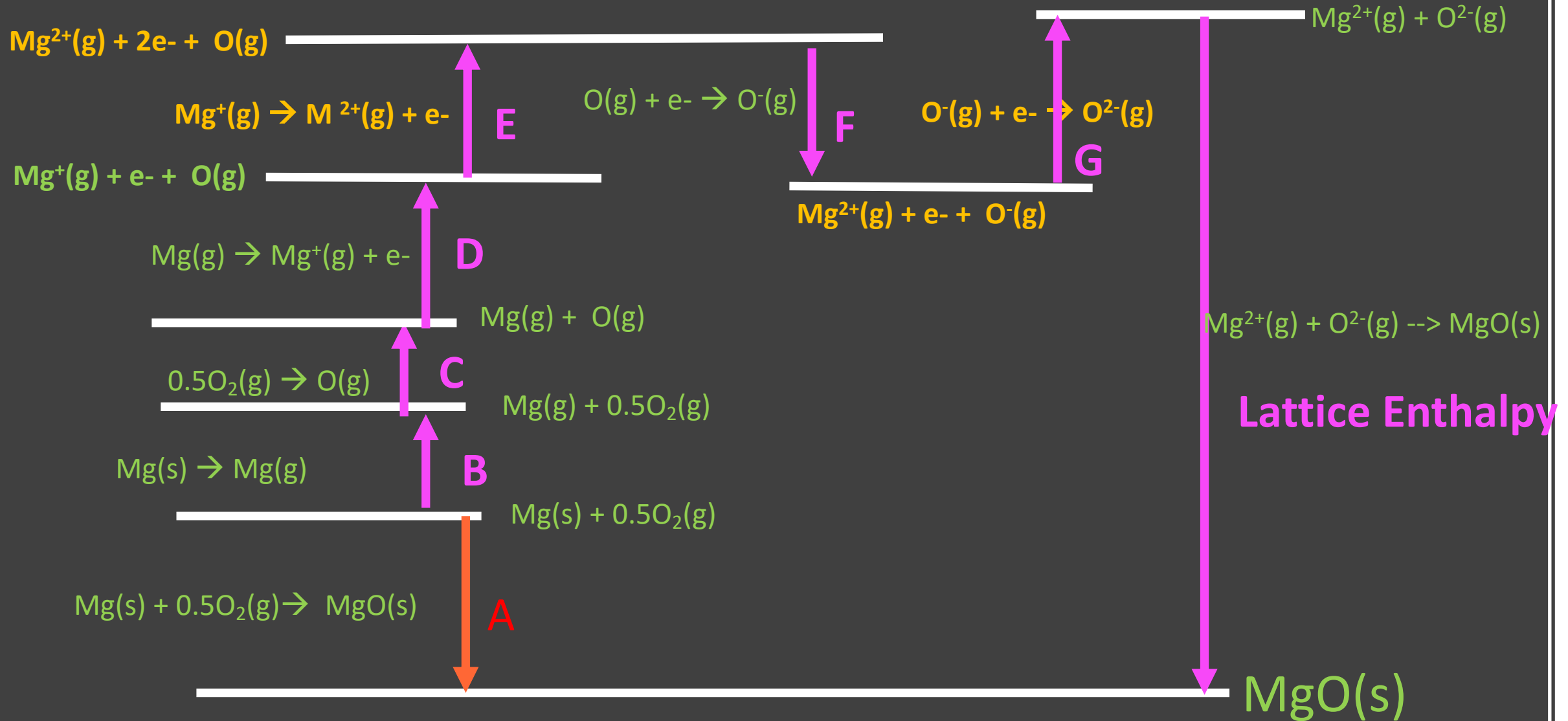




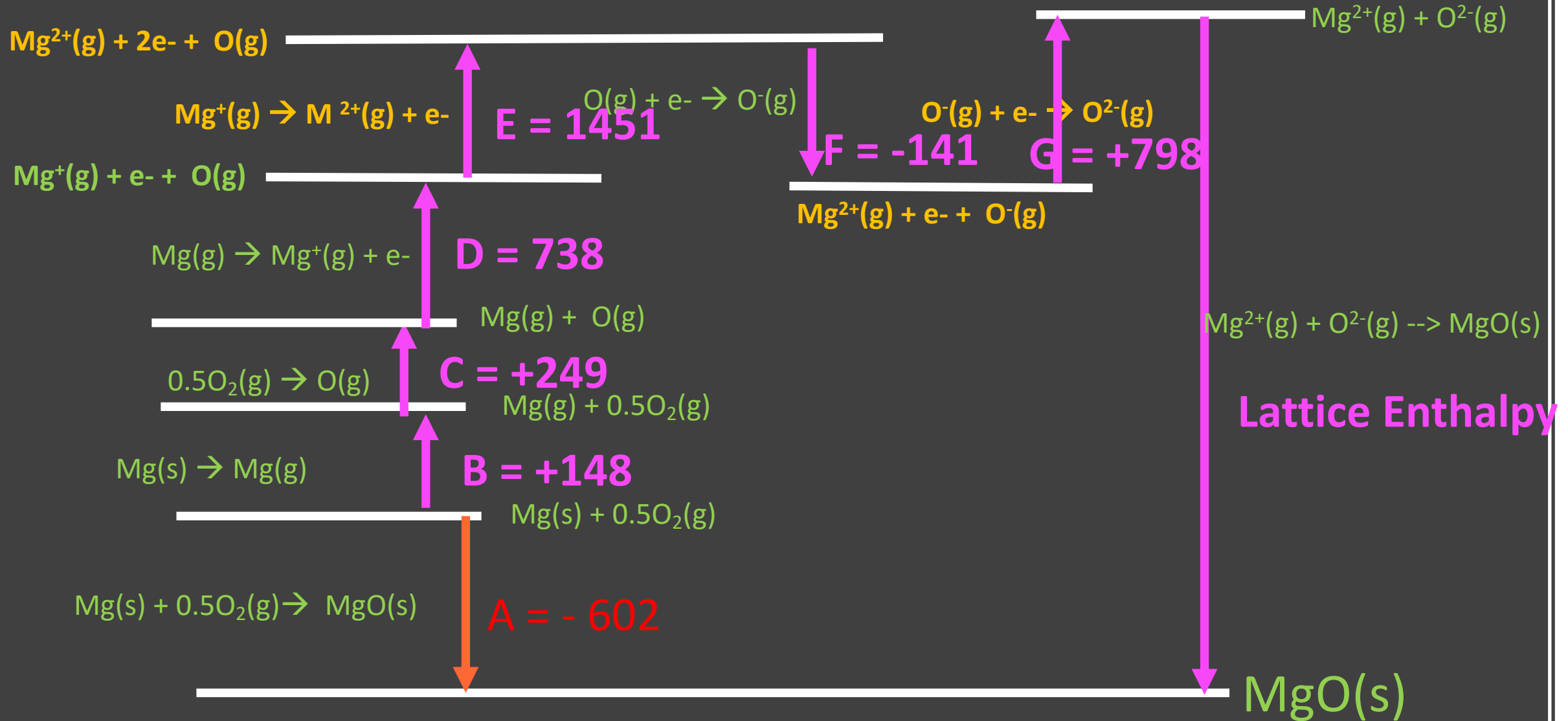




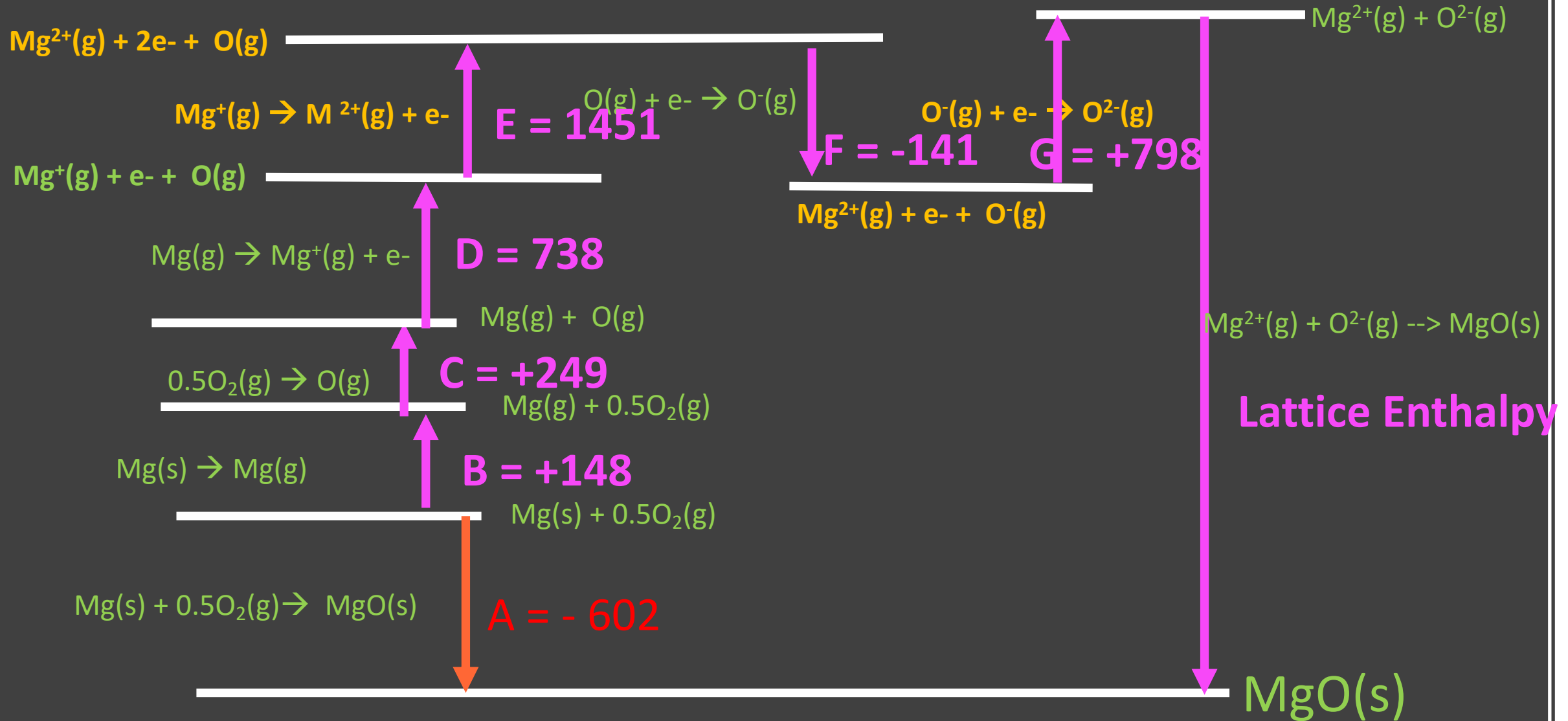




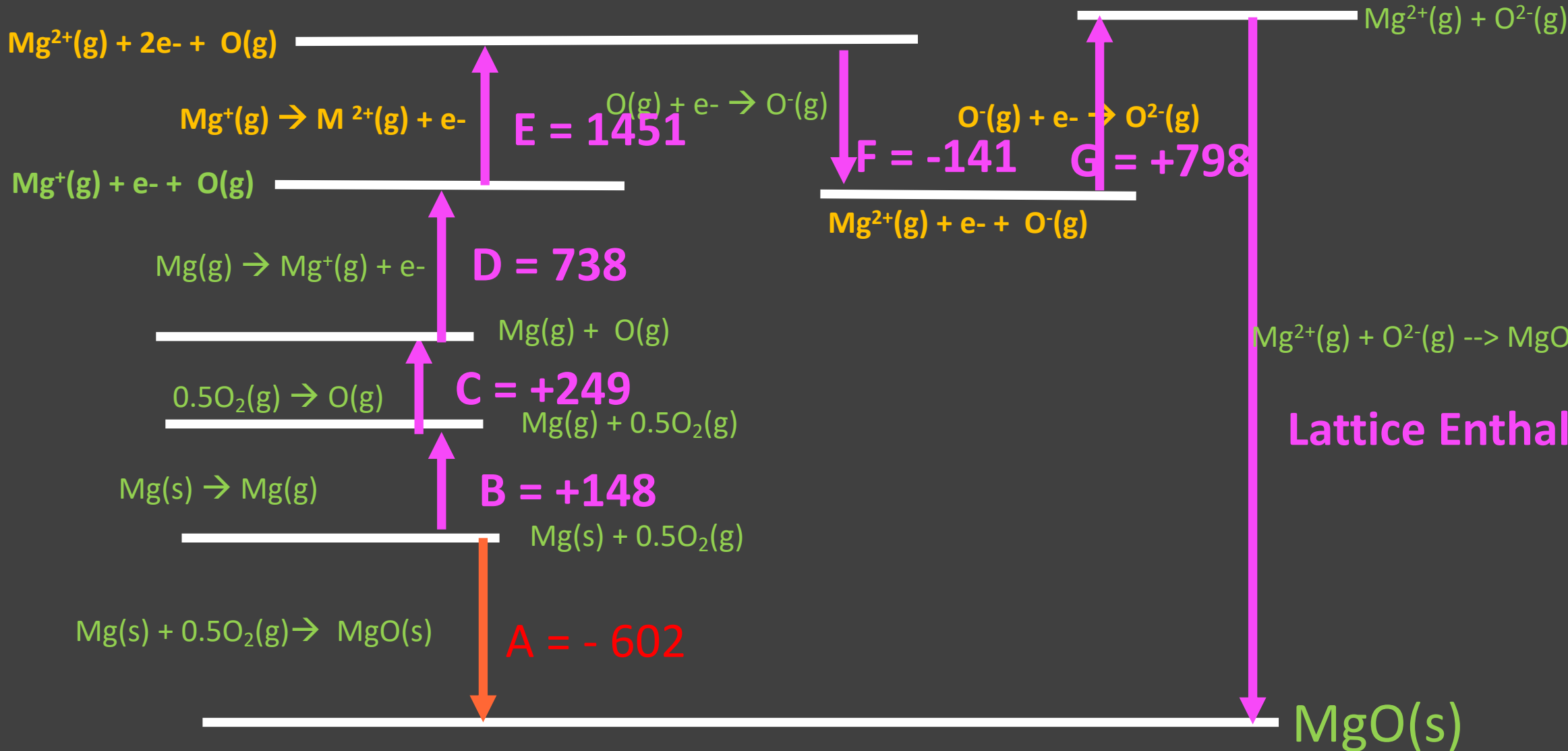
$$A = B + C + D + E + F + G + \text{Lattice Enthalpy}$$



$$A - (B + C + D + E + F + G) = \text{Lattice Enthalpy}$$



$$-602 - (148 + 249 + 738 + 1451 - 141 + 798) = \text{Lattice Enthalpy}$$



$$-602 - 3243 = \text{Lattice Enthalpy}$$

