

**B.Sc. Semester-VI
GroupA / DSE-4
Organic Synthesis**

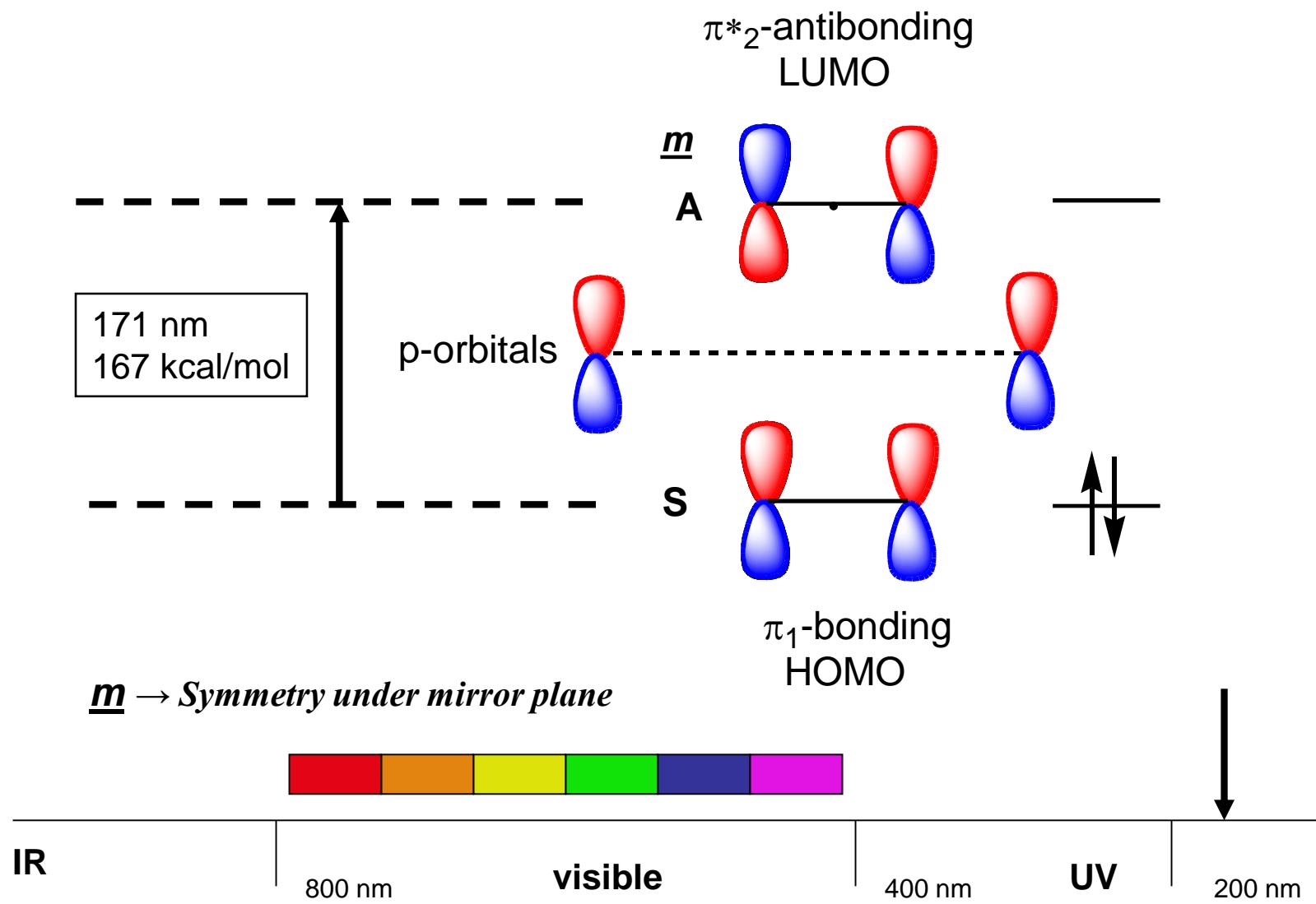


**II. Pericyclic Reactions
1. Molecular Orbital Symmetry**

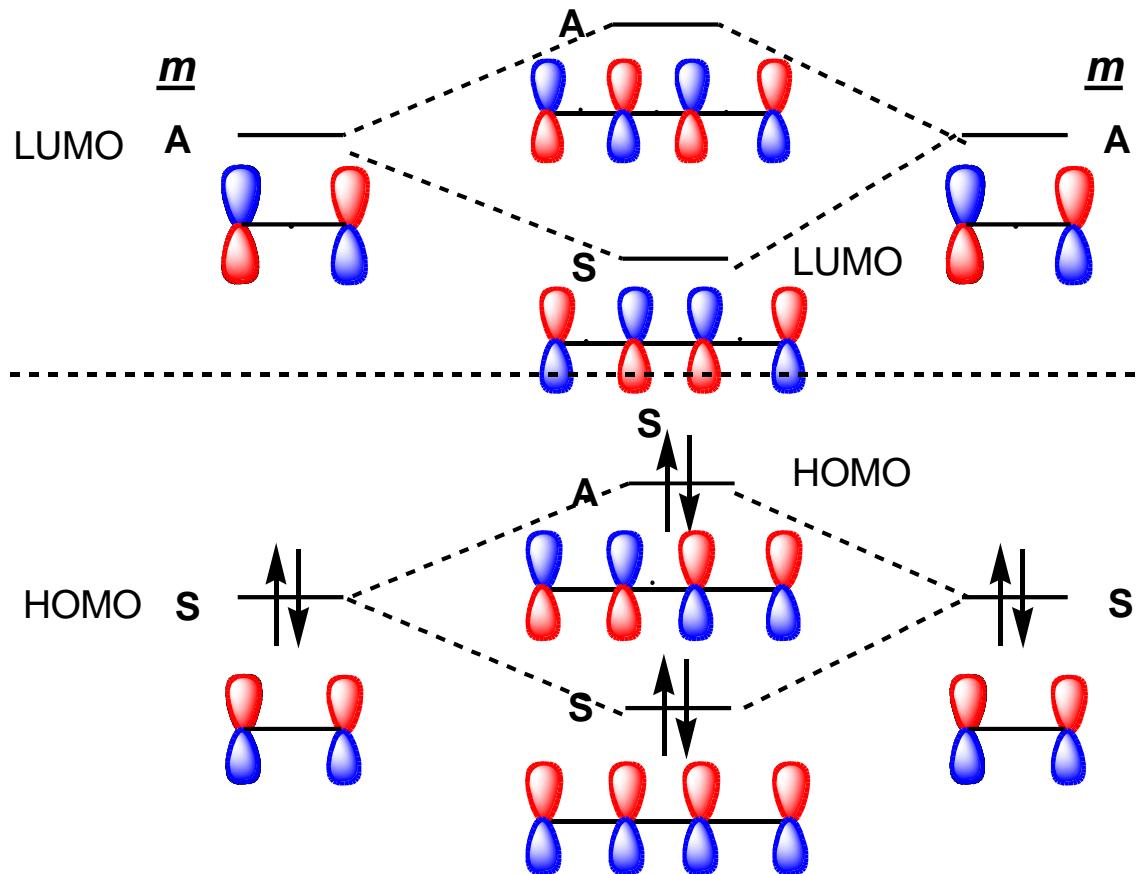


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π -Molecular Orbitals of Ethylene

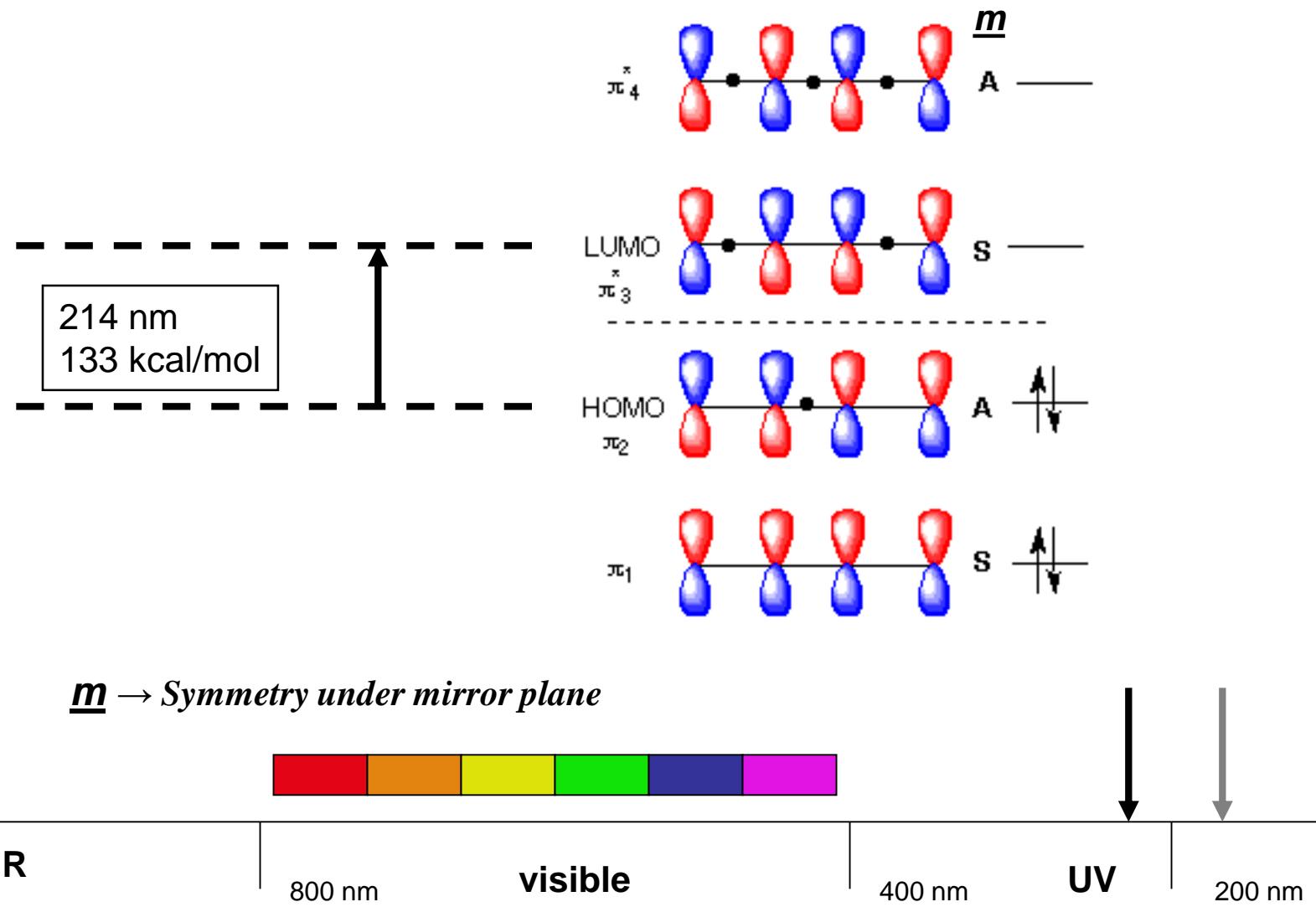


π -Molecular Orbitals of 1,3-Butadiene from Ethylene

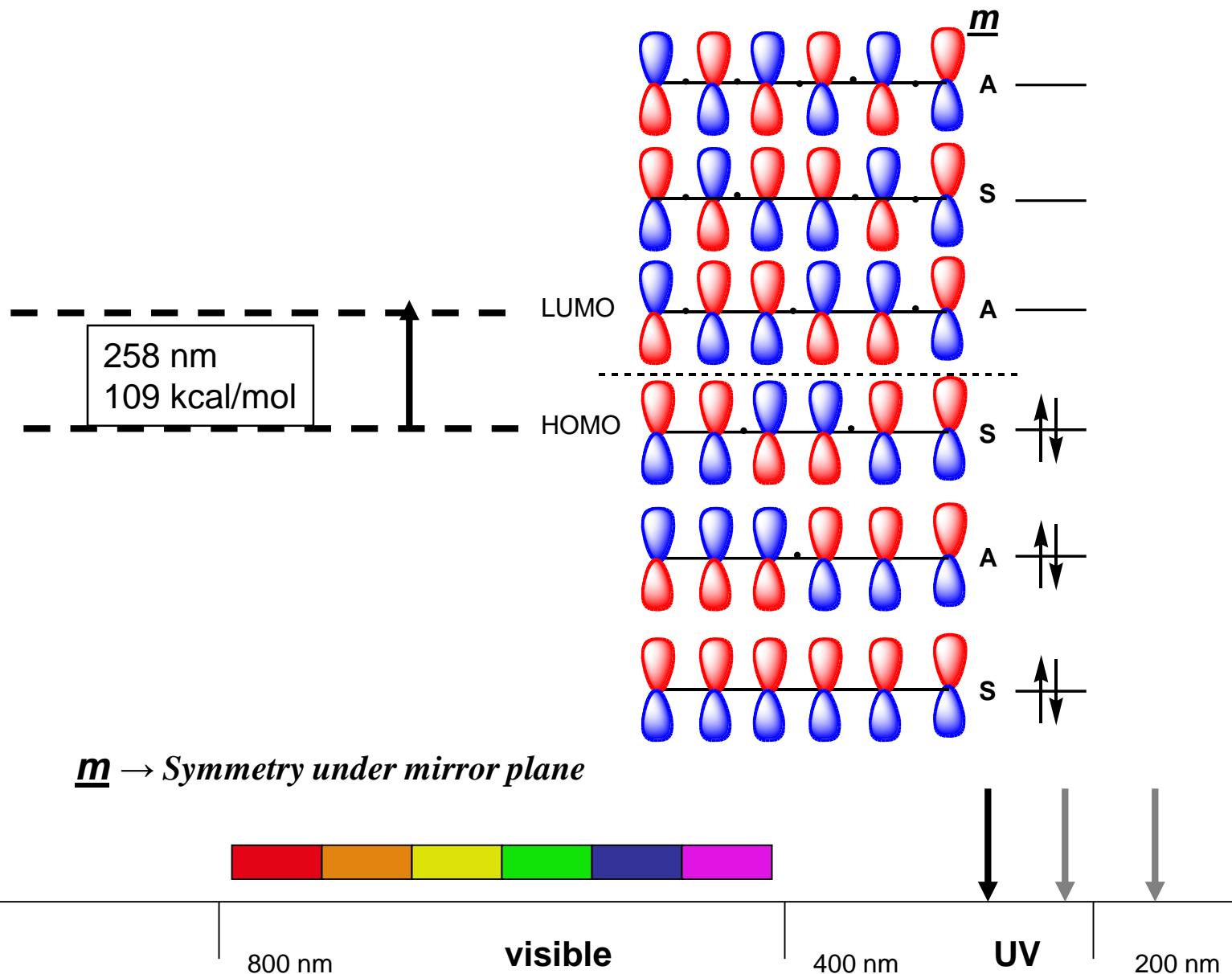


m → Symmetry under mirror plane

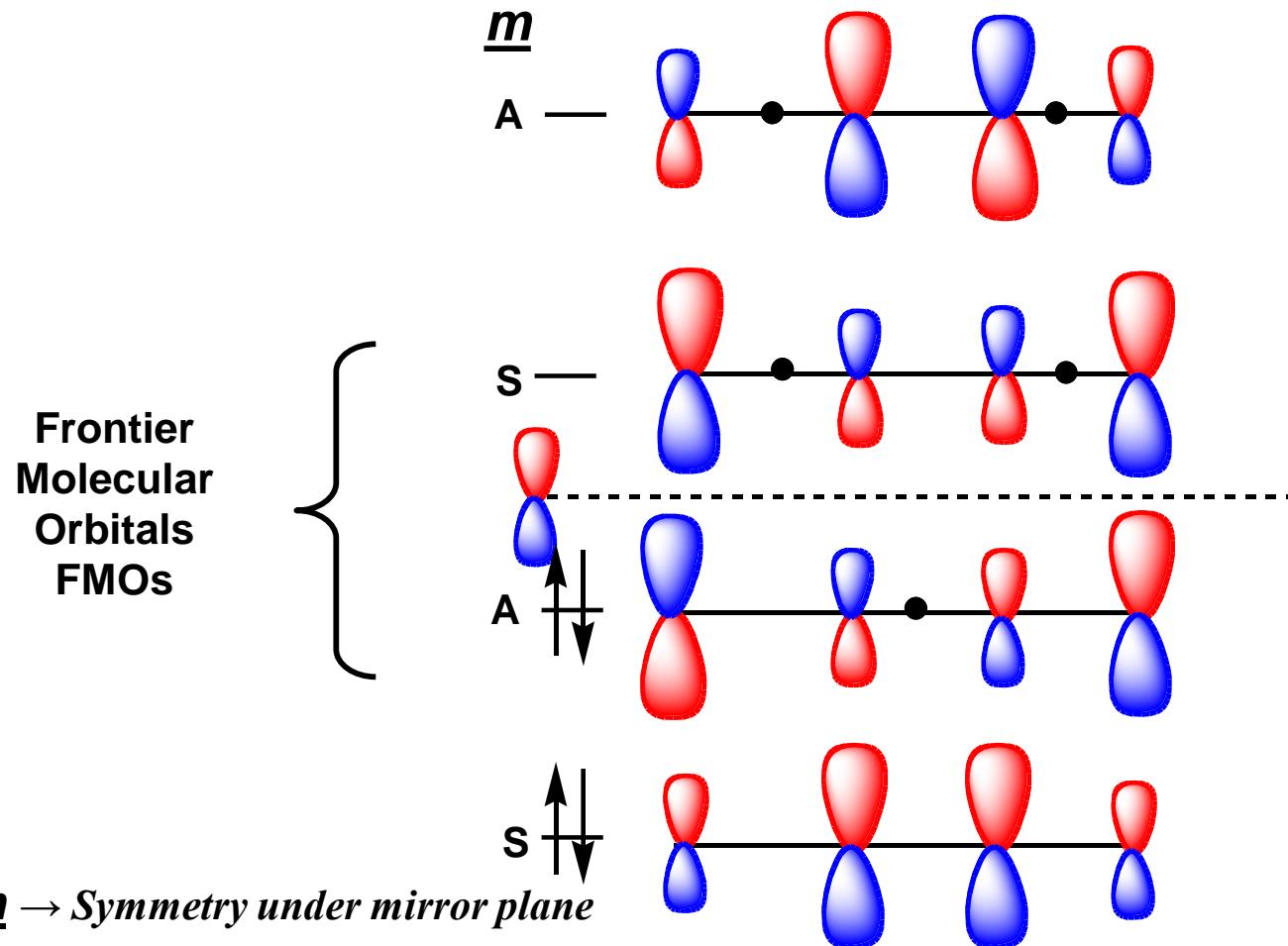
π -Molecular Orbitals of 1,3-Butadiene



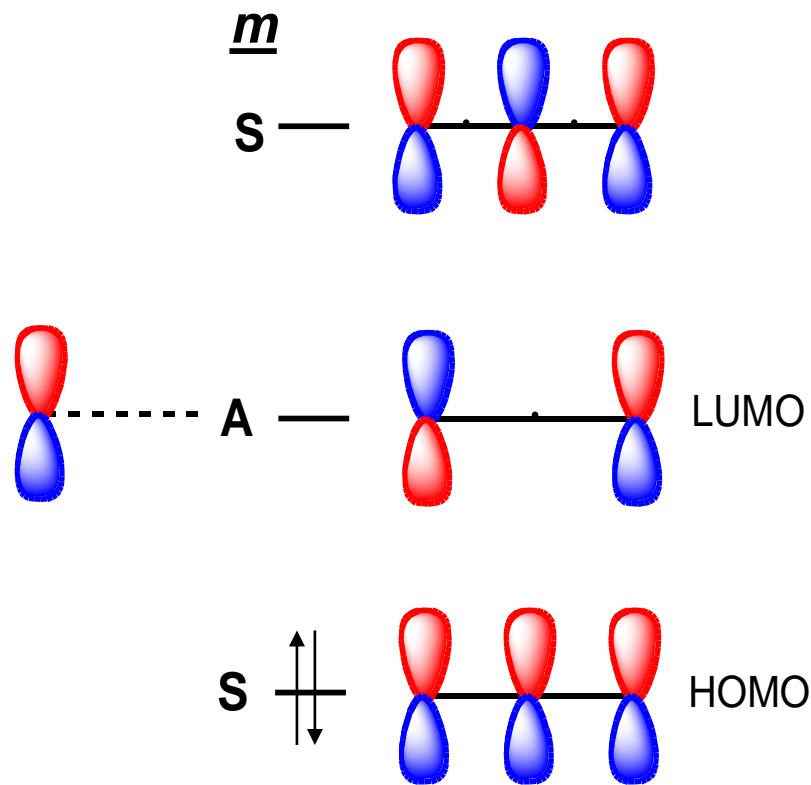
π -Molecular Orbitals of 1,3,5-Hexatriene



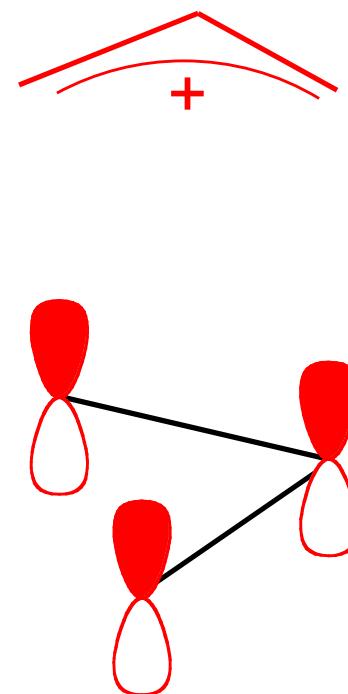
Butadiene: Orbital Coefficients



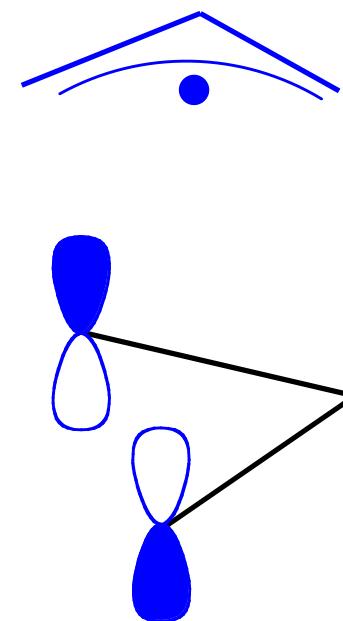
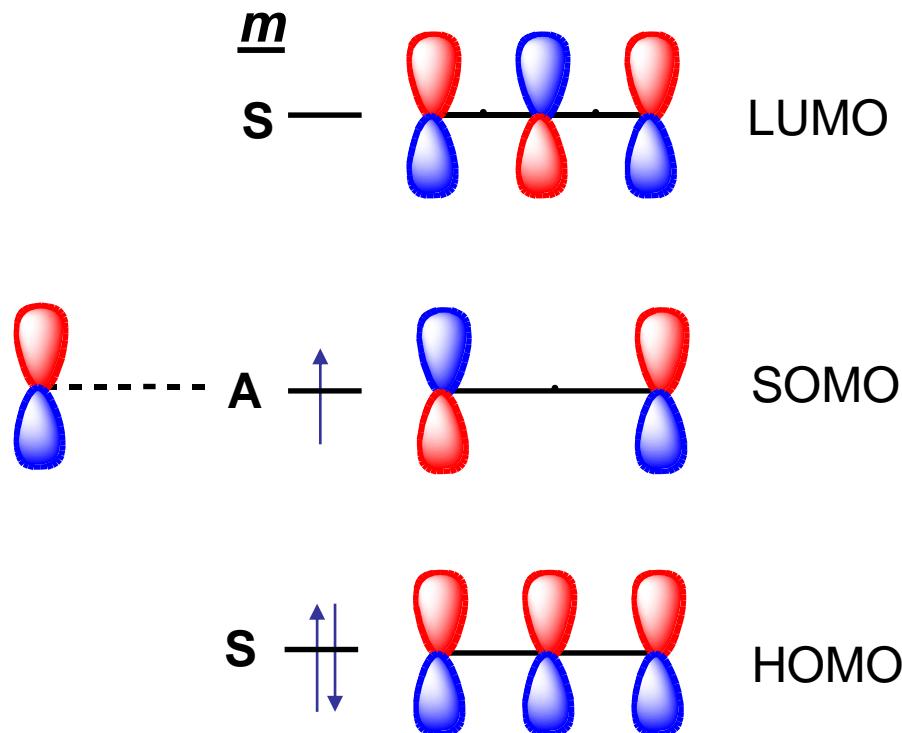
The Allylic System: Allyl Cation



m → Symmetry under mirror plane

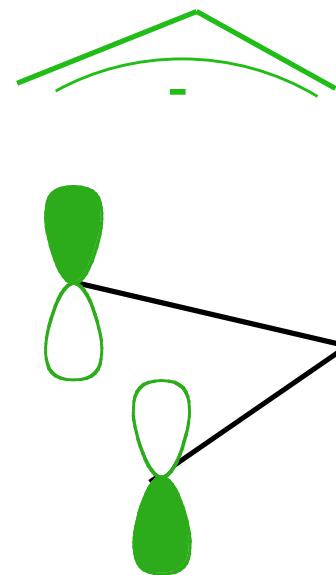
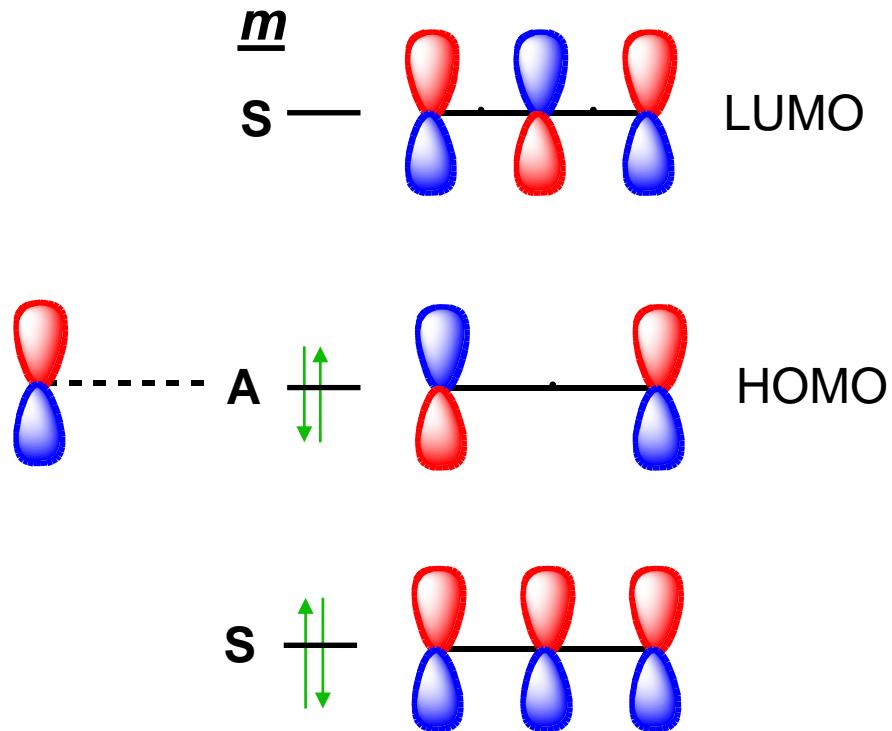


The Allylic System: Allyl Radical



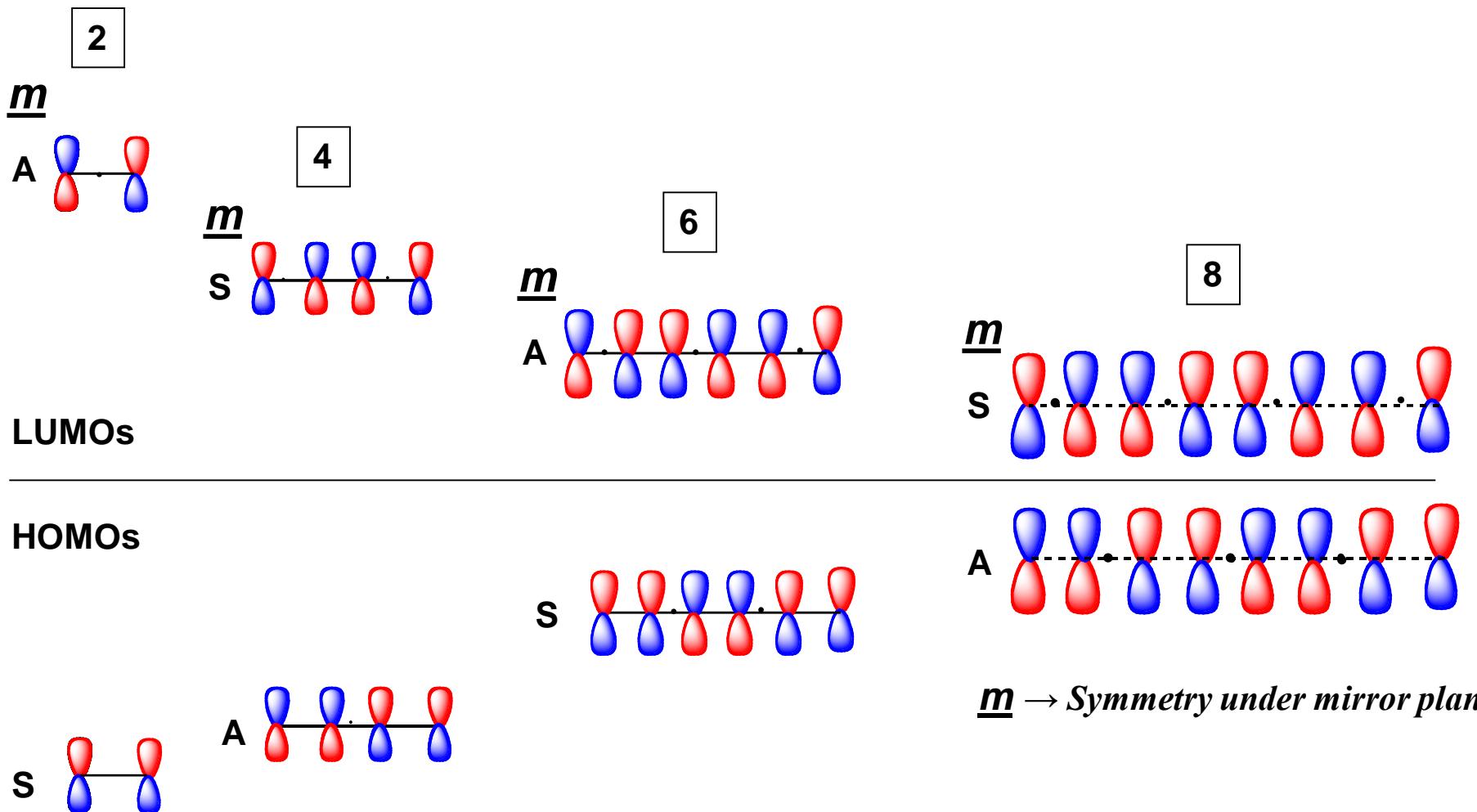
m → Symmetry under mirror plane

The Allylic System: Allyl Anion



m → Symmetry under mirror plane

Energy Gap Between HOMO and LUMO



$\underline{m} \rightarrow \text{Symmetry under mirror plane}$

Thank You



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