

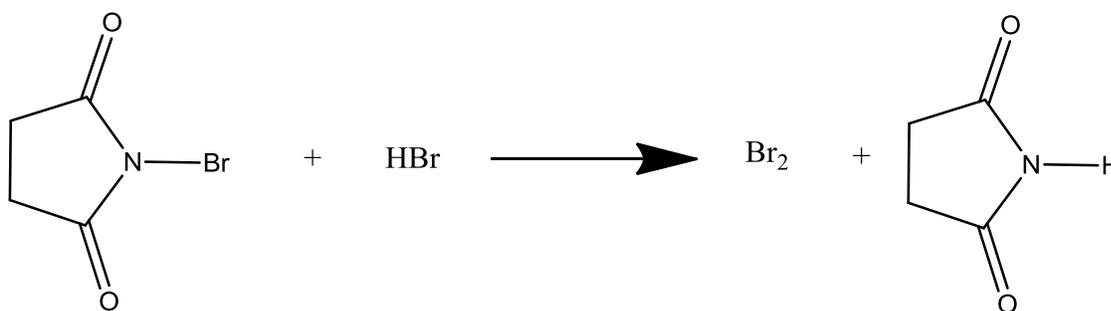
## Answer on Question #54466 – Chemistry – Organic Chemistry

### Question:

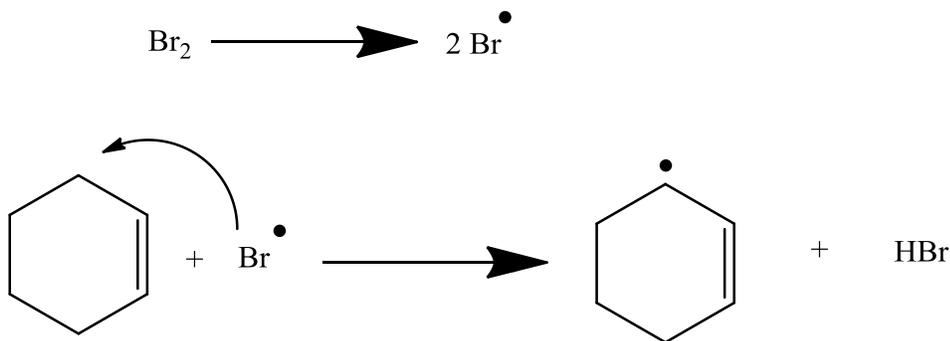
Why does bromination take place at allylic position when cyclohexene is treated with N-bromosuccinimide? Explain with mechanism.

### Answer:

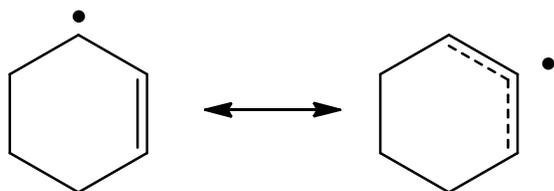
This bromination is a radical reaction which occurs in diluted solution of non-polar aprotic solvent. At the first stage NBS and HBr produce bromine:



Under heating Bromine forms bromine radical which attacks the cyclohexene molecule. Dissociation energies for allylic, alkylic and vinylic C-H bonds are 88 kcal/mol, 98 kcal/mol, 106 kcal/mol, respectively. Since the energy of C – H bond is the lowest at allylic position, the substitution occurs there:



Moreover, the formed cyclohexene radical is stable, because of the delocalization of electron via  $\pi$ -bond.



This makes allylic substitution more favorable than at other positions.

