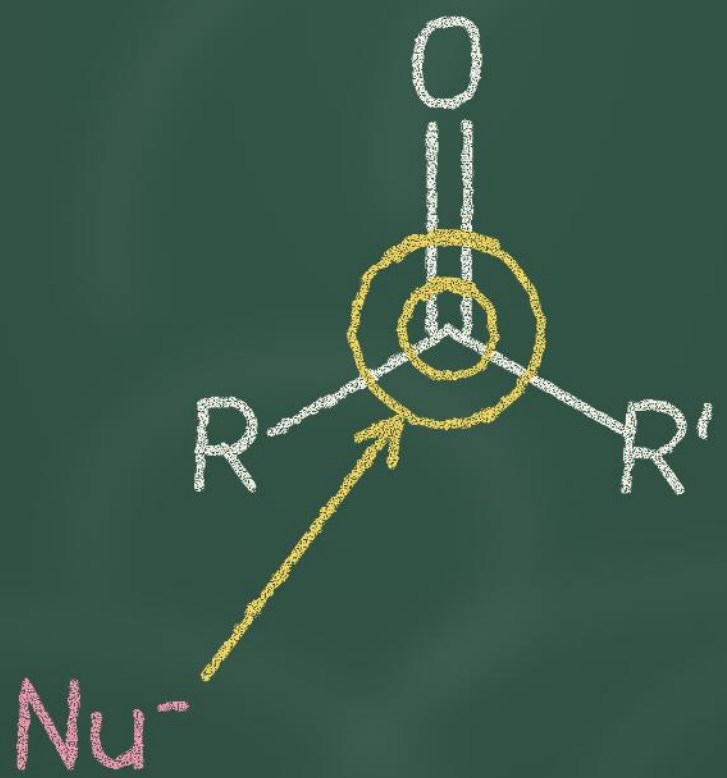
PrayogX · Chemistry

PRAYOGX

The Carbonyl Group

C=O looks simple...



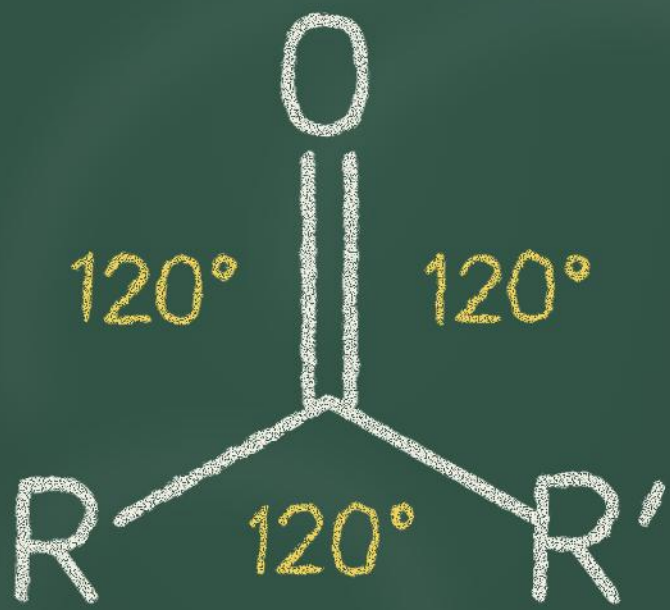
why is this C the target?

PrayogX · Chemistry

PRAYOGX

The Carbonyl Group

sp^2 carbon



three σ bonds
all in one plane

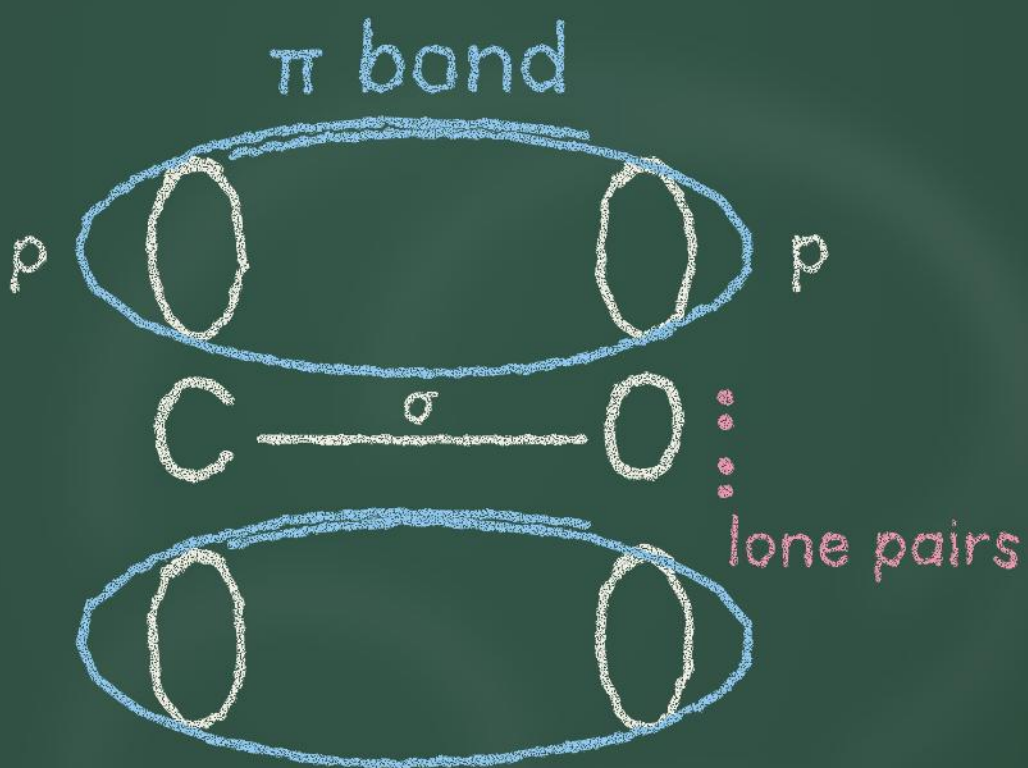
planar

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PRAYOGX

The Carbonyl Group

side view of C=O



π cloud: above and below the plane

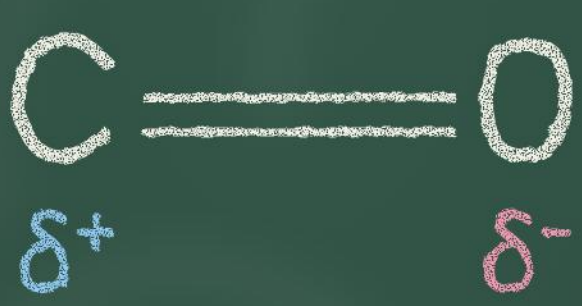
PrayogX · Chemistry

PRAYOGX

The Carbonyl Group

O is more electronegative

electrons pulled to O



a polar bond

more polar than ethers

PrayogX · Chemistry

PRAYOGX

The Carbonyl Group

resonance



the real molecule:

a hybrid of both

PrayogX · Chemistry

PRAYOGX

The Carbonyl Group

C: electrophilic (δ^+)

O: nucleophilic (δ^-)



the nucleophile attacks the C

planar · polar · δ^+ carbon