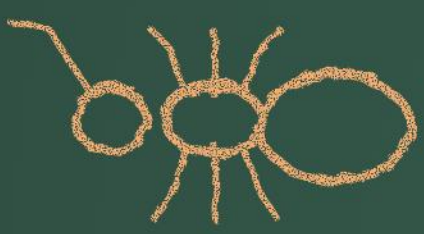
PrayogX · Chemistry

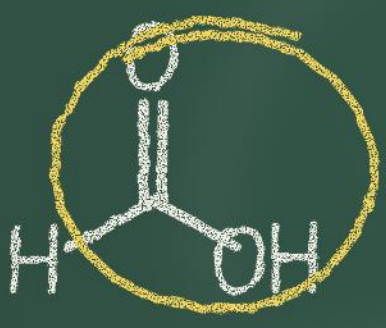
PRAYOGX

The Carboxyl Group

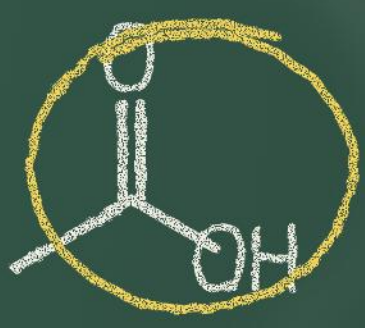


ant sting





formic acid



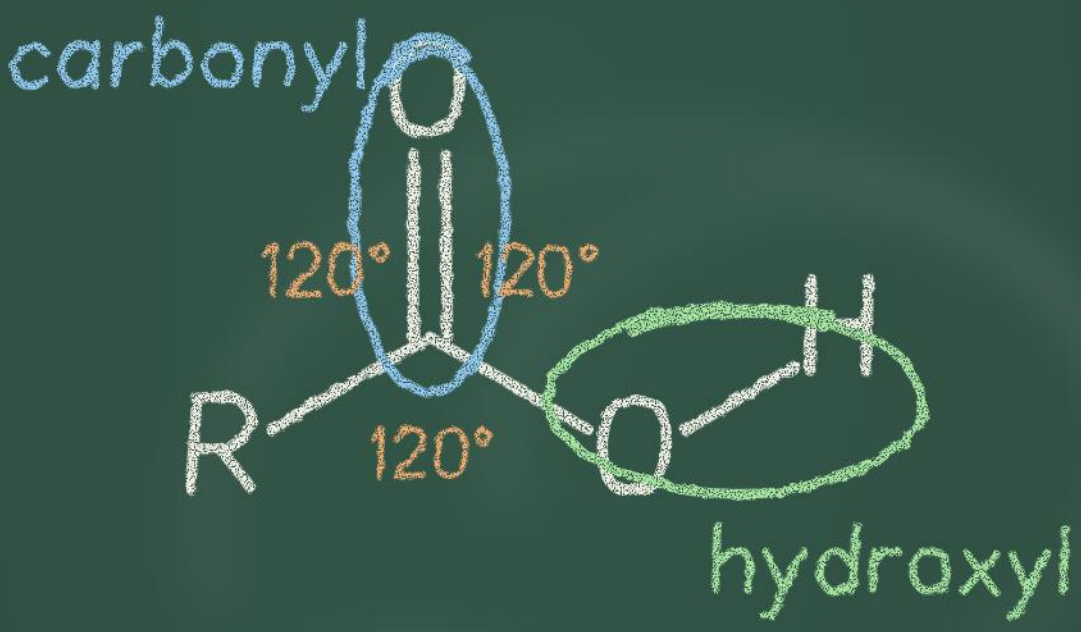
acetic acid

-COOH: the carboxyl group

PrayogX · Chemistry

PRAYOGX

The Carboxyl Group



carbonyl + hydroxyl

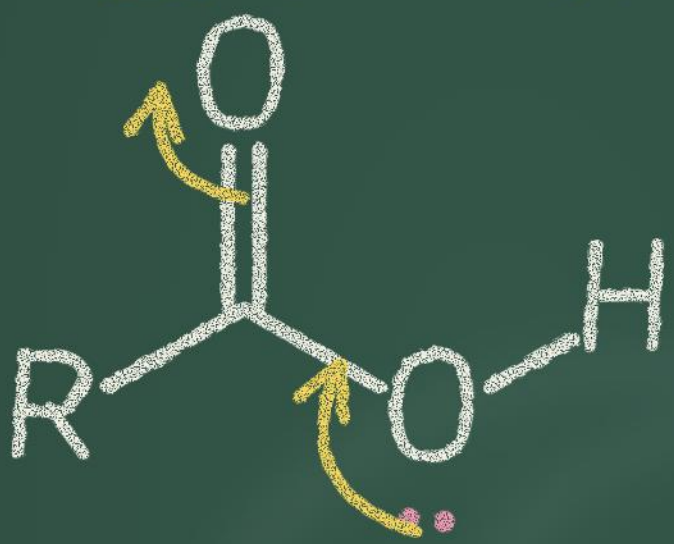
= carboxyl

C is sp^2: flat

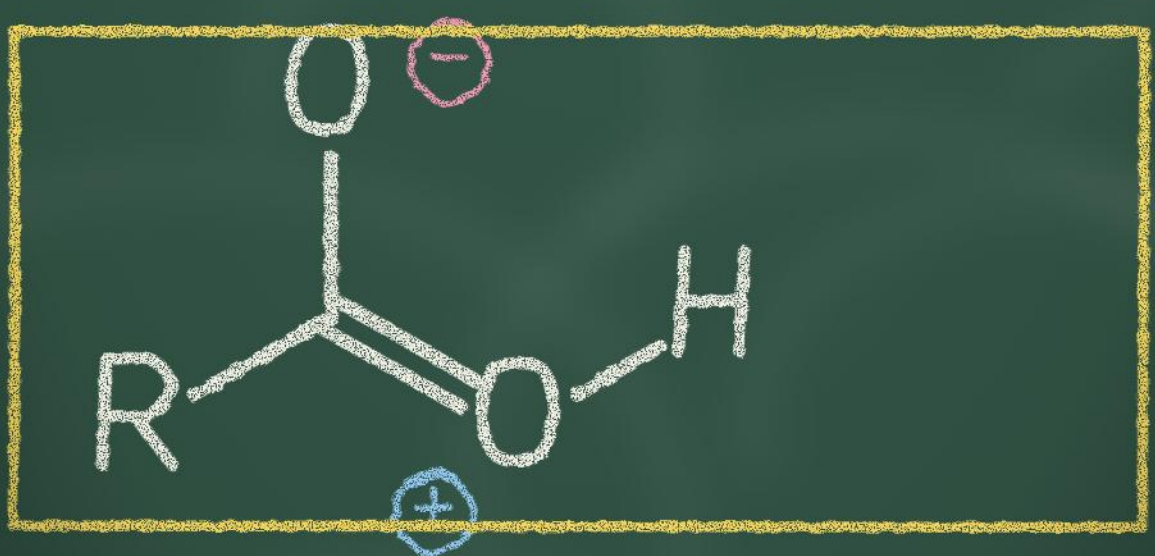
PrayogX · Chemistry

PRAYOGX

The Carboxyl Group



resonance

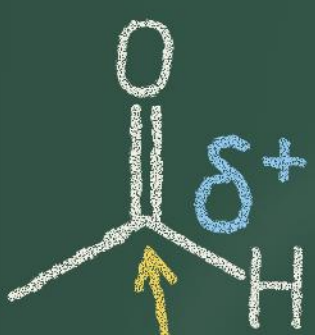


PrayogX · Chemistry

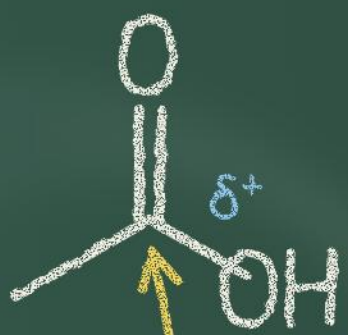
PRAYOGX

The Carboxyl Group

aldehyde



acid



aldehyde C: more δ+

acid C: less δ+

less electrophilic

Nu^-

Nu^-

no nucleophilic addition for acids

(no HCN, $NaHSO_3$, 2,4-DNP products)

PrayogX · Chemistry

PRAYOGX

The Carboxyl Group

common names: from the source

formica = ant → formic acid
$HCOOH$

acetum = vinegar → acetic acid
CH_3COOH

butyrum = butter → butyric acid
$CH_3CH_2CH_2COOH$

the smell of rancid butter

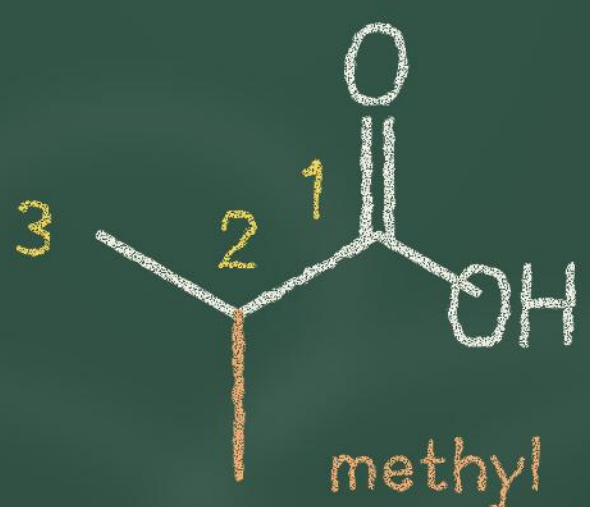
PrayogX · Chemistry

PRAYOGX

The Carboxyl Group

alkane − e + oic acid

1 C	methanoic acid	$HCOOH$
2 C	ethanoic acid	CH_3COOH
3 C	propanoic acid	CH_3CH_2COOH



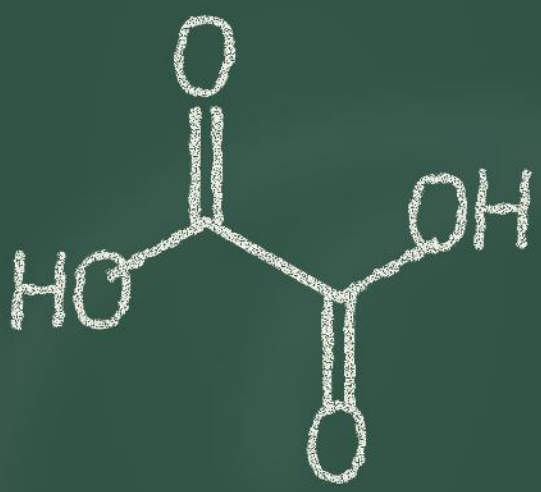
2-methylpropanoic acid

PrayogX · Chemistry

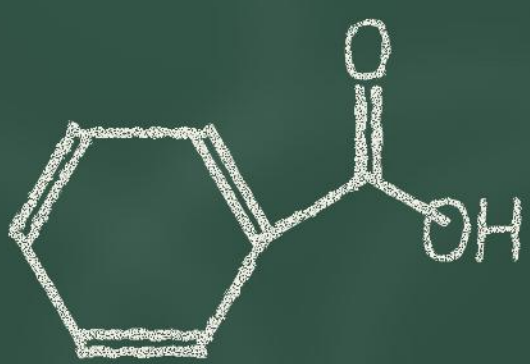
PRAYOGX

The Carboxyl Group

two COOH: keep the e



ethanedioic acid
(oxalic acid)



benzoic acid

PrayogX · Chemistry

PRAYOGX

The Carboxyl Group

remember

-COOH = C=O + OH

resonance: C is less electrophilic

common names: from the source

IUPAC: alkane − e + oic acid

next: making carboxylic acids →