

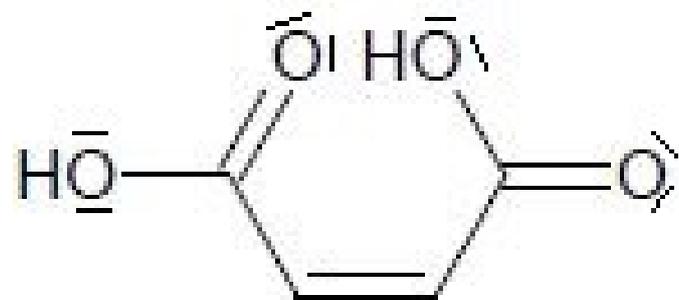
# Règle de l'octet

Les atomes cherchent à avoir 8 électrons  
dans leur couche de valence  
(pour  $Z < 5$ , 2 électrons, règle du duet)

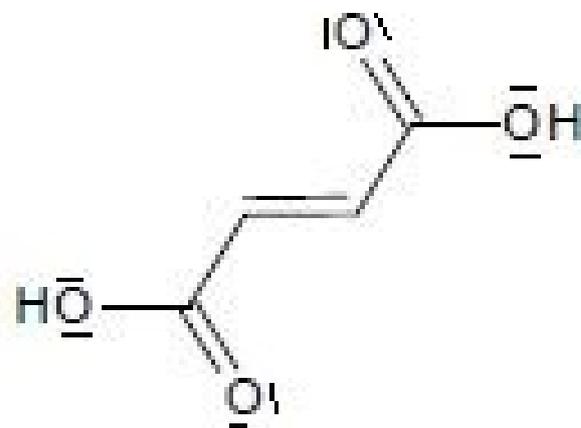


|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| H<br>2.20  |            |            |            |            |            |            |            |            |            |            |            | B<br>2.04  | C<br>2.55  | N<br>3.04  | O<br>3.44  | F<br>3.98  |            |
| Li<br>0.98 | Be<br>1.57 |            |            |            |            |            |            |            |            |            |            |            | Al<br>1.61 | Si<br>1.90 | P<br>2.19  | S<br>2.58  | Cl<br>3.16 |
| Na<br>0.93 | Mg<br>1.31 |            |            |            |            |            |            |            |            |            |            |            | Ga<br>1.81 | Ge<br>2.01 | As<br>2.18 | Se<br>2.55 | Br<br>2.96 |
| K<br>0.82  | Ca<br>1.00 | Sc<br>1.36 | Ti<br>1.54 | V<br>1.63  | Cr<br>1.66 | Mn<br>1.55 | Fe<br>1.83 | Co<br>1.88 | Ni<br>1.91 | Cu<br>1.90 | Zn<br>1.65 | In<br>1.78 | Sn<br>1.96 | Sb<br>2.05 | Te<br>2.1  | I<br>2.66  |            |
| Rb<br>0.82 | Sr<br>0.95 | Y<br>1.22  | Zr<br>1.33 | Nb<br>1.6  | Mo<br>2.16 | Tc<br>1.9  | Ru<br>2.2  | Rh<br>2.28 | Pd<br>2.20 | Ag<br>1.93 | Cd<br>1.69 | Tl<br>1.62 | Pb<br>2.33 | Bi<br>2.02 | Po<br>2.0  | At<br>2.2  |            |
| Cs<br>0.79 | Ba<br>0.89 | *          | Hf<br>1.3  | Ta<br>1.5  | W<br>2.36  | Re<br>1.9  | Os<br>2.2  | Ir<br>2.20 | Pt<br>2.28 | Au<br>2.54 | Hg<br>2.00 | Pb<br>2.33 | Bi<br>2.02 | Po<br>2.0  | At<br>2.2  |            |            |
| Fr<br>0.7  | Ra<br>0.9  | **         | Rf         | Db         | Sg         | Bh         | Hs         | Mt         | Ds         | Rg         | Cn         | Uut        | Uuq        | Uup        | Uuh        | Uus        |            |
| *          | La<br>1.1  | Ce<br>1.12 | Pr<br>1.13 | Nd<br>1.14 | Pm<br>1.13 | Sm<br>1.17 | Eu<br>1.2  | Gd<br>1.2  | Tb<br>1.1  | Dy<br>1.22 | Ho<br>1.23 | Er<br>1.24 | Tm<br>1.25 | Yb<br>1.1  | Lu<br>1.27 |            |            |
| **         | Ac<br>1.1  | Th<br>1.3  | Pa<br>1.5  | U<br>1.38  | Np<br>1.36 | Pu<br>1.28 | Am<br>1.13 | Cm<br>1.28 | Bk<br>1.3  | Cf<br>1.3  | Es<br>1.3  | Fm<br>1.3  | Md<br>1.3  | No<br>1.3  | Lr<br>1.3  |            |            |

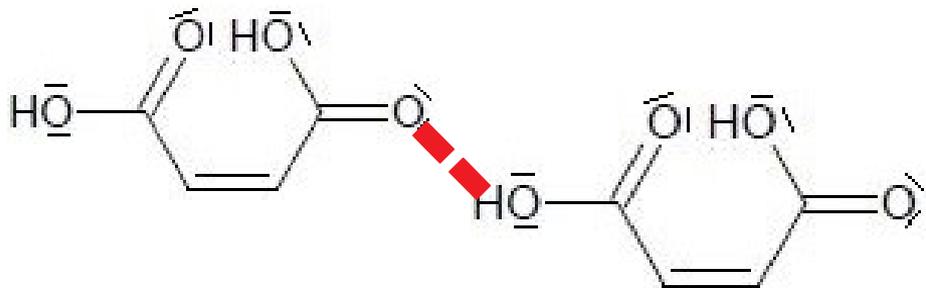




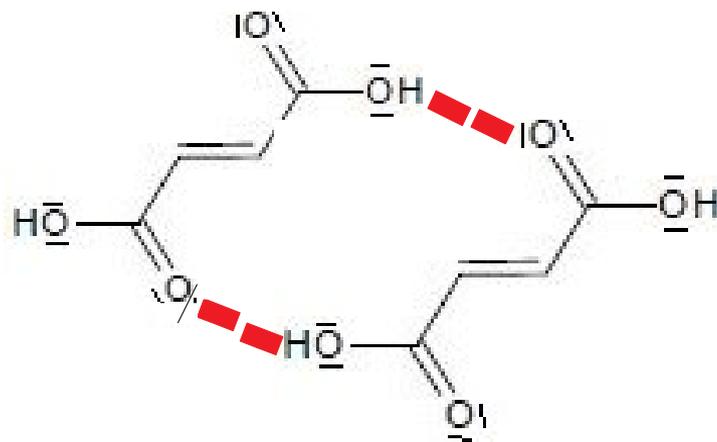
Acide maléique



Acide fumarique



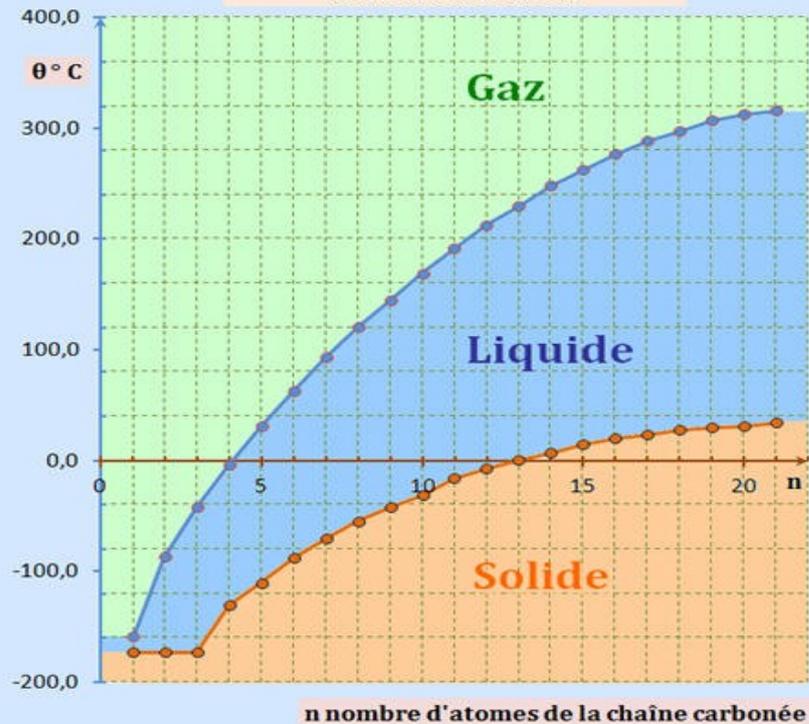
acide maléique



acide fumarique



Températures de fusion et d'ébullition  
des alcanes linéaires





| Échelle     | Liaison                       | Énergie        |
|-------------|-------------------------------|----------------|
| atomique    | Liaison covalente             | 100-500 kJ/mol |
| moléculaire | Liaison H                     | 10-50 kJ/mol   |
|             | Interactions de Van der Waals | 1-50 kJ/mol    |