In chemistry, an ionic compound is a chemical compound in which ions are held together in a lattice structure by ionic bonds. Usually, the positively charged portion consists of metal cations and the negatively charged portion is an anion or polyatomic ion. Ions in ionic compounds are held together by the electrostatic forces between oppositely charged bodies. Ionic compounds have high melting and boiling points, and they are hard and very brittle.

Ca^{2+} can form an ionic compound with OH^-,and it is $Ca(OH)_2$.

$Ca^{2+} + 2\ OH^- \Leftrightarrow Ca(OH)_2$

It is possible, because of product consists of metal cations Ca^{2+} and the negatively charged portion anion OH^-. The same reason why ionic compound can't be formed is for H_2O and $2O^-$.

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