

ABSTRACT

A proton conductor comprises a carbonaceous material essentially comprising a carbon, into which proton dissociating groups are introduced. In the proton conductor, protons migrate between the proton dissociating groups. Also, the ion conductivity of the proton conductor is larger than electron conductivity thereof. A carbon cluster such as a fullerene or a carbonaceous tubular material, or so-called carbon nano-tube, or a carbonaceous material which has diamond structures is used as a carbonaceous material.