

ABSTRACT

CARBON-BASED COMPOSITE MATERIAL, PREPARATION METHOD THEREFOR, AND APPLICATION THEREOF

The invention discloses a carbon-based composite material and its preparation method and application, which belongs to the technical field of carbon material preparation. The carbon-based composite material comprises the substrate, carbon film and structural carbon. The carbon film is loaded on the substrate surface, and the structural carbon grows on the carbon film forming an integrated structure with the carbon film and the substrate. In the preparation process, the alkali metal and/or alkaline earth metal catalysts are used to make the carbon source deposit an integrated carbon film and structural carbon on the substrates surface, so as to avoid the use of binder, improve the effective specific surface area of the composite material, increase the bonding strength and electrical contact performance between the carbon material and the substrate, and modify the electron, ion, atom transmission and chemical structure characteristics of the material surface. Therefore, the carbon-based composite materials prepared by this disclosure have excellent physical and chemical properties, which can be used for various applications comprising the battery electrodes, capacitor electrodes, various sensors, solar cell electrodes, electrolytic water hydrogen production electrodes, hydrogen storage materials, catalysts and catalyst carriers, reinforcing materials and so on.

FIGURE 4