Electrode unit for an electrochemical device

Abstract

An electrode unit for an electrochemical device, comprising (i) a solid electrolyte which divides a space for molten cathode material, selected from the group consisting of elemental sulfur and polysulfide of the alkali metal anode material, and a space for molten alkali metal anode material, and (ii) a porous solid state electrode directly adjacent to the solid electrolyte within the space for the cathode material, with a non-electron-conducting intermediate layer S present between the solid state electrode and the solid electrolyte, wherein this intermediate layer S has a thickness in the range from 0.5 to 5mm and, before the first charge of the electrochemical device, has been impregnated fully with a polysulfide composition, comprising (A) pure polysulfides Met_2S_x with Met = alkali metal of the alkali metal anode material selected from lithium, sodium, potassium, and x is dependent on the alkali metal and is 2, 3, 4 or 5 for Na and is 2, 3, 4, 5, 6, 7, 8 for Li and is 2, 3, 4, 5, 6 for K, or (B) mixtures of the polysulfides of one and the same alkali metal from (A) with one another.