

The paper presents the results of the research on a new polymer-membrane and gel electrolytes for electrochromic devices. A complementary solid-state electrochromic device consisting of cathodically coloring working electrode of WO<sub>3</sub> and anodically coloring counter electrode of NiO films is prepared to compare the effects of gel or membrane forms of carboxymethyl cellulose (CMC) polymer electrolyte on the electrochromic properties of devices. The performance evaluations of the complementary solid-state electrochromic devices indicate good reversibility, low power consumption of  $\pm 3$  V in colored state, high variation of transmittance changing of 64% in gel electrolyte, and lower 7% in membrane electrolyte and good memory effect under open-circuit conditions. CMC based electrolytes can be used as an ion-conducting medium and be a good candidate for complementary electrochromic devices owing to, the improved properties as well as its cheapness.

Keywords: Electrochromic, electron beam, carboxymethyl cellulose electrolyte