**Supporting Information**

**Title**

**Mechanism of optical reflectance enhancement on Ag electrodeposition-based electrochromic cells by introduction of citric acid**

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**Supplementary experiment**

The silver deposition experiments by using electrolytes without citric acid but containing three different AgNO3 concentrations are performed (10, 30, 50 mM) like Reference study.1 (constant potential: -2.5 V vs. Ag/Ag+, 80 mC) and intermittent potential method (-2.5 V vs. Ag/Ag+ , 80 mC is divided into three parts: 27 + 27 + 26 mC), XRD analysis of the obtained Ag deposits shows that the intensity of <111> crystal orientation is positively correlated with the reflectance of the corresponding silver deposits, and the surface morphology of the deposits with high intensity <111> crystal orientation is relatively smoother. In addition, under the same experimental conditions, the signal intensity of <111> crystal plane of silver deposits prepared by intermittent potential method is also higher than that of silver films prepared by constant potential method. (Fig. S1)



**Figure. S1.** X‐ray diffraction pattern of deposited Ag by the electrolyte (containing 10, 30, 50 mM AgNO3) without citric acid under (constant potential -2.5 V vs. Ag/Ag+, 80 mC ) and the intermittent potential method (-2.5 V vs. Ag/Ag+ , 80 mC is divided into three parts: 27 + 27 + 26 mC), respectively.

**Reference**

1. H. Wang, T. Sugita, K. Nakamura, and N. Kobayashi, *Sol. Energy Mater. Sol. Cells.*, **271**, 112830 (2024).