

# On the Electrochromic Properties of Co-based Organic-Metallic Hybrid Polymer

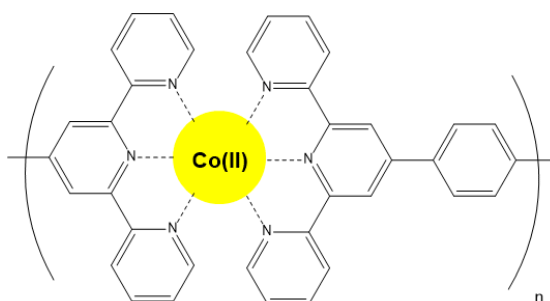
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Keywords : organic-metallic hybrid polymer / electrochromism / electrochemistry / Cobalt

Electrochromism (EC) is a color switching in materials under the manipulation of potential bias [1]. Due to the ability of electrochromic materials in controlling light attenuation easily, electrochromic devices (ECDs) that incorporate such materials have been developed and have served in several commercial products like energy-saving smart windows or anti-glare rear view mirrors [2]. Aside from these, emerging products like electrochromic displays have gained lots of attention since electrochromic materials that exhibit various colors have already been synthesized and demonstrated [3, 4]. Moreover, the relatively lower power consumption of electrochromic display comparing to other display gadgets making them even attractive in terms of sustainability. Recently, in order to increase its feasibility towards application, substantial efforts have been devoted to achieve black-to-transmissive electrochromism by many research groups [5]. Nevertheless, the number of reports that address this topic remains limited.

In this talk, a cobalt-based metallo-supramolecular polymer (**PolyCo**), which shows the ability of black-to-transmissive electrochromism, will be presented. The electrochromism possessed by **PolyCo** is attributed to the redox reaction of cobalt cation and the metal-to-ligand charge transfer phenomenon accompany with this reaction. Since both its colored and bleached states of **PolyCo** are close to the origin of CIE L\*a\*b\* coordinate, this material demonstrates great potential to be utilized in electrochromic displays.



**Figure 1.** Chemical structure of **PolyCo**.

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#### Professional Career

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#### Academic Activity

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