



High-Performance Electrochromic Devices



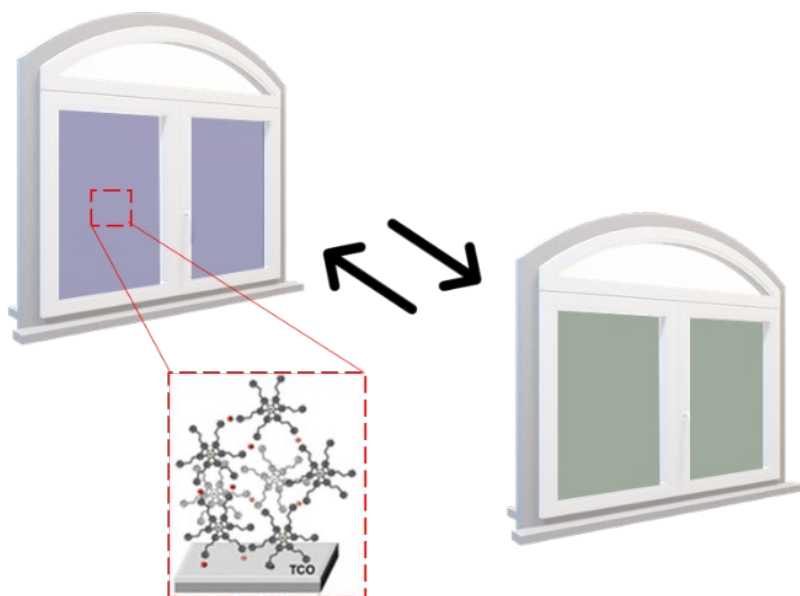
Material
Science



DeepTech

Reference Number: **1380** \ Principal Investigator: **Prof. Milko Van Der Boom** \ Patent Status: **PCT/IL2025/050324, IL245702A0, US-2019-0023981-A1**

Current electrochromic materials offer a broad color range and moderate electrochromic activity. However, real-world applications demand more intense coloration, faster switching times, and improved stability. To address these needs, new electrochromic materials have been developed and integrated into an optimized, fully automated spray-coating process for smart, color-changing surfaces. This controlled synthesis and coating method enables precise tuning of color palette, intensity, and reversibility, ensuring rapid response times and high color-switching efficiency. These advances position the technology as a strong candidate for high-performance electrochromic devices.



APPLICATIONS

- Smart color-changing glass (windows/glasses/mirrors/windshields etc.)
- Color displays
- Electrochromic lenses and helmet-visors
- Wearables devices
- Electrochemical sensors

DEVELOPMENT STAGE

Electrochromic materials with a diverse color palette were demonstrated on a 6×6 cm surface and integrated into an efficient, fully automated spray-coating process, enabling enhanced coloration control.

DIFFERENTIATION



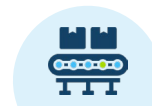
Fully reversible optical responses



Very high coloration efficiency



Color tuning by synthetic means



Automated spray-coating process



Fast response times (~400 ms for >95%)

REFERENCES

- Malik et al., ACS Appl. Mater. Interfaces, 2019.

