



# Luminescent coatings: White-color luminescence from a simple and single chromophore with high anticorrosion efficiency

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## Abstract:

Luminescent coatings have potential commercial applications. Here, the photoluminescence, thermal, and corrosion inhibition properties of reported Schiff bases have been studied. Moreover, quantum chemical calculations have been done to realize the working mechanism of their properties. Interestingly, we succeeded to get a single-chromophore white-color emission from a small Schiff base molecule through a simple technique, where the relative emission intensities at the long and short wavelengths of the visible range were controlled by introducing electron-donating or withdrawing groups. Furthermore, the compounds were found thermally stable and can emit efficiently until 124 °C. Also, the electrochemical impedance spectroscopy, electrochemical frequency modulation, Tafel polarization, and surface characterizations have been investigated. The studied compounds showed high inhibition efficiencies (ex. 93%) and played a great role in retarding the stainless-steel corrosion in 2 M H<sub>2</sub>SO<sub>4</sub>. These measurements confirmed that the existence of these Schiff bases can reduce the double-layer capacities, corrosion current densities, and corrosion rate simultaneously with increasing the charge transfer resistance values. The studied materials as luminescent coatings may be employed for mixed-type inhibitors and can provide a strategy for the development of new organic materials capable of producing whitecolor emission from a simple and single molecule.

## Keywords:

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