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Palladium(II) complexes with thioether containing azophenol ligands: synthesis, characterization, X-ray structure and DNA binding study

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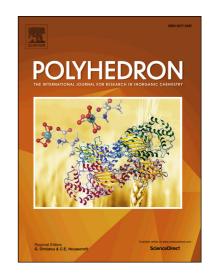
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 $\label{palladium} \textbf{Palladium}(\textbf{II}) \hspace{0.2cm} \textbf{complexes} \hspace{0.2cm} \textbf{with} \hspace{0.2cm} \textbf{thioether} \hspace{0.2cm} \textbf{containing} \hspace{0.2cm} \textbf{azophenol} \hspace{0.2cm} \textbf{ligands:}$

synthesis, characterization, X-ray structure and DNA binding study

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Abstract

The new palladium(II) complexes [Pd(L¹/L²)Cl] (1/2), with ONS donor azo-thioether ligands

(HL¹/HL²), have been successfully synthesized. The complexes were thoroughly characterized

by several spectroscopic techniques. The distorted square planar geometries of the complexes

were confirmed by single crystal X-ray analysis. The electronic structures, redox and spectral

properties are interpreted by DFT and TDDFT calculations. The interaction of the complexes

with CT DNA was investigated by the UV-vis method and the binding constant was found to be

 $3.56 \times 10^4 \text{ M}^{-1}$ for 1 and $5.72 \times 10^4 \text{ M}^{-1}$ for 2. A competitive binding titration with ethidium

bromide (EB) by the fluorescence titration method revealed that the complexes efficiently

displace EB from the EB-DNA system and the Stern-Volmer dynamic quenching constant, K_{sv},

was found to be 1.28×10^4 M⁻¹ and 2.04×10^4 M⁻¹ for **1** and **2** respectively.

Keywords: Palladium(II) complex; ONS donor azo-thioether ligand; X-ray structure;

Electrochemistry; DNA binding; DFT computation.

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