

**Thin films of chlorosubstituted vanadyl phthalocyanine:
charge transport properties and optical spectroscopy
study of structure**

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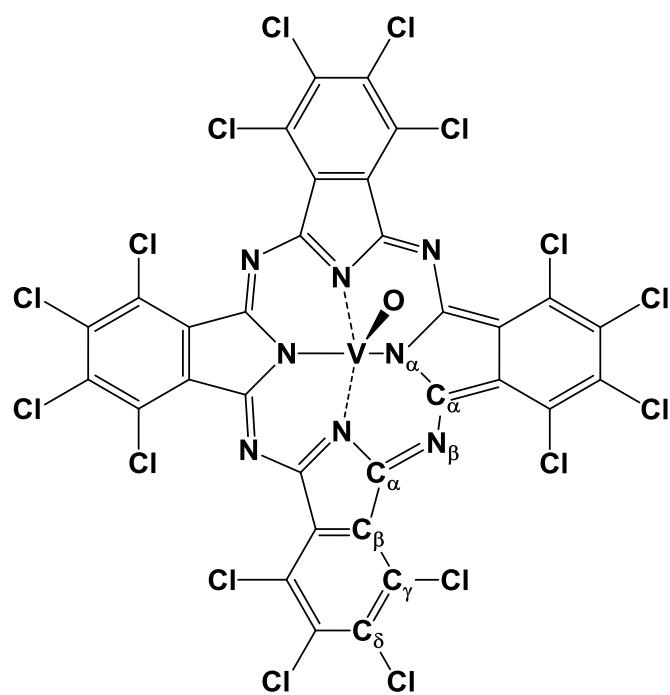


Figure 1. Structure of VOPcCl₁₆ molecule.

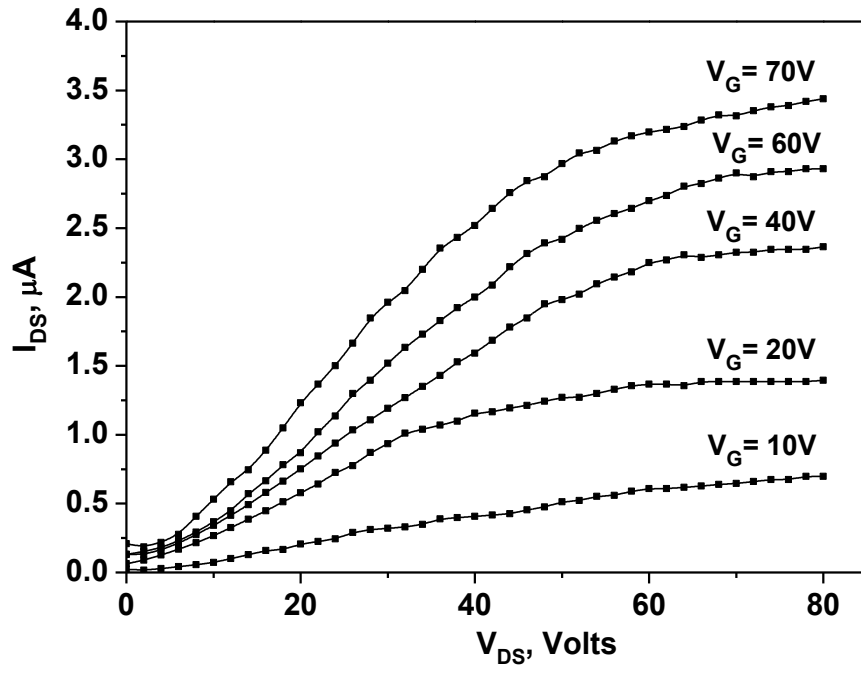


Figure 2. The source-drain current (I_{DS}) as a function of drain-source voltage (V_{DS}) characteristics of field effect transistor based on VOPcCl₁₆ film at various source-gate voltage values (V_G). The experimental points are black squares connected with splines to visualize trends.

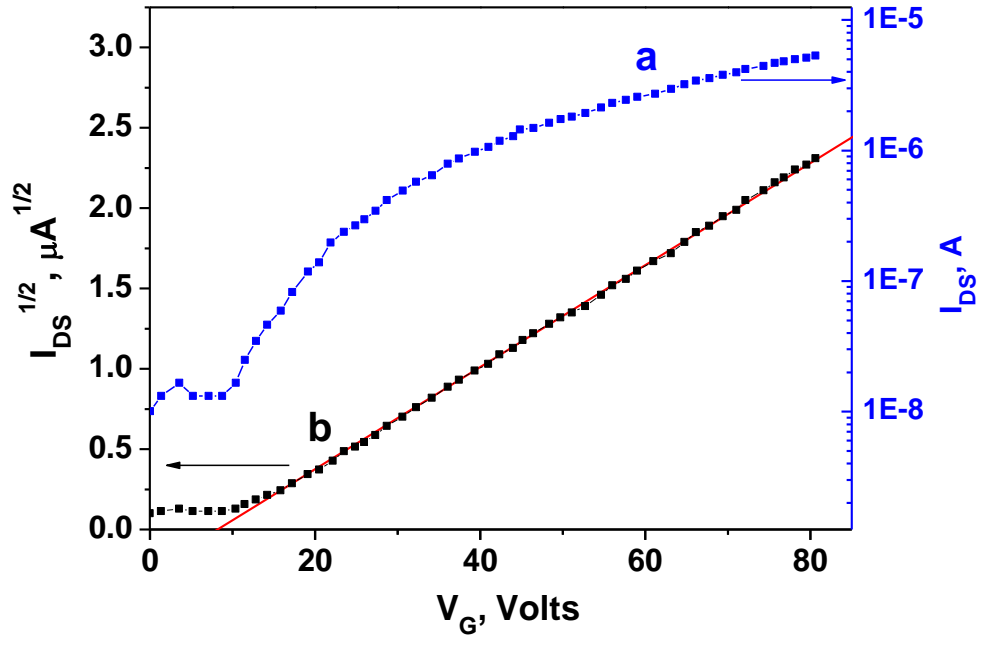


Figure 3. (a) The transfer curves I_{DS} versus V_{GS} for a field effect transistor based on VOPcCl₁₆ film at $V_{DS} = 80V$. (b) $\sqrt{I_{DS}}$ versus V_{GS} for a fixed drain-source voltage of 80 V in the saturation regime.

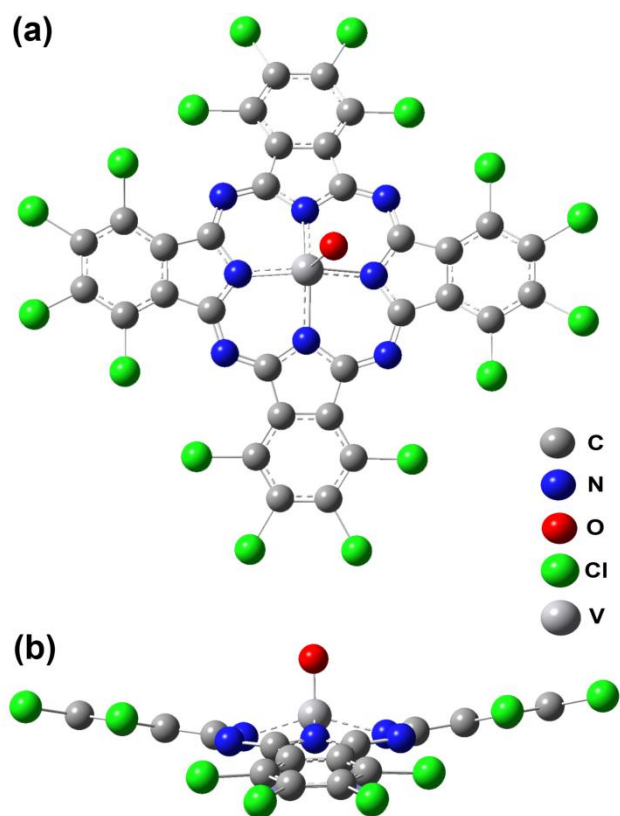


Figure 4. B3LYP/6-311++G(2df,p) optimized structure of the VOPcCl₁₆ molecule: (a) top view; (b) side view.

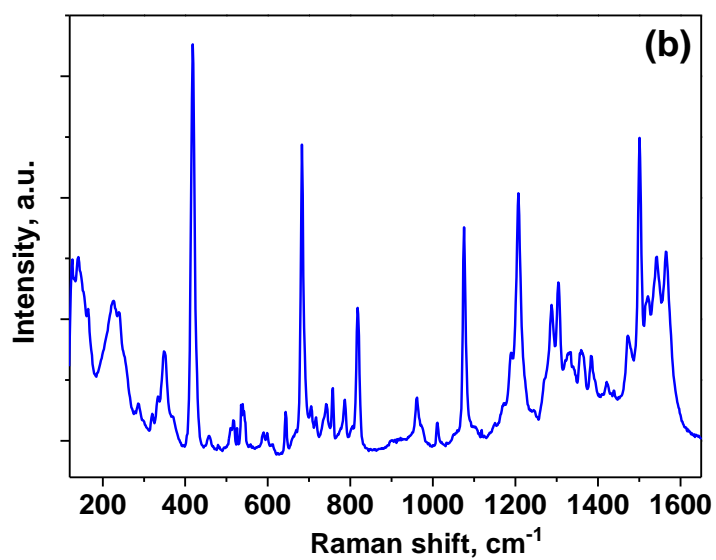
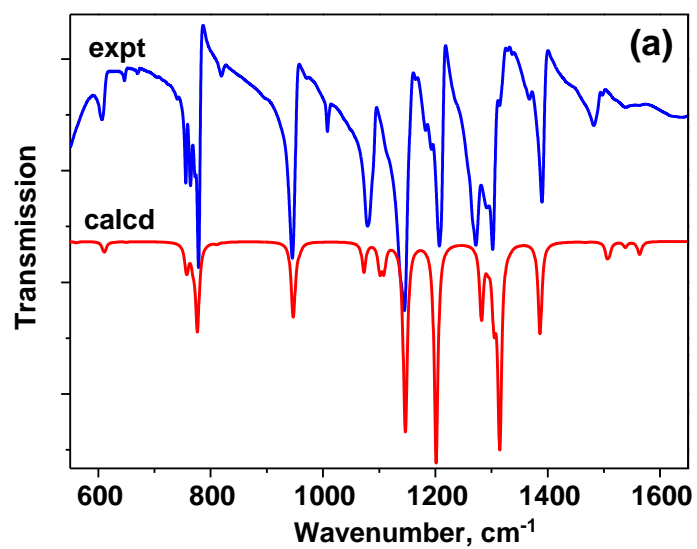


Figure 5. (a) IR spectra of VOPcCl₁₆: experimental (blue graphic) and B3LYP/6-311++G(2df,p) calculated (red graphic); (b) Experimental Raman spectrum of VOPcCl₁₆.

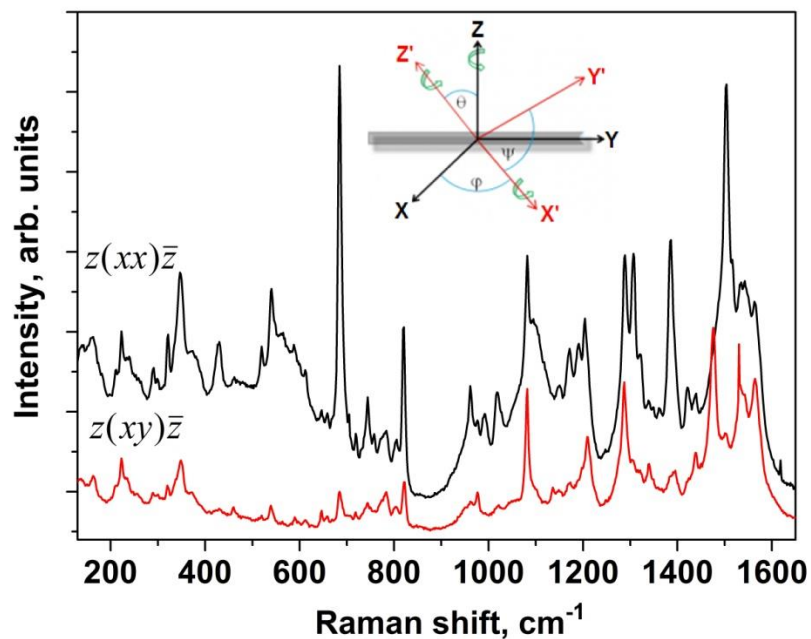


Figure 6. Polarized Raman spectra of VOPcCl₁₆ film (glass substrate), recorded in the parallel ($z(xx)\bar{z}$) and cross ($z(xy)\bar{z}$) polarizations of the incident and scattered light. The inset illustrates the coordinate notation: the Euler angles ϕ , θ (which is the tilt angle between Z and Z'), and ψ correspond to rotations around the Z-axis of a substrate, the molecular X'-axis, and around the Z'-axis of a molecule, respectively.

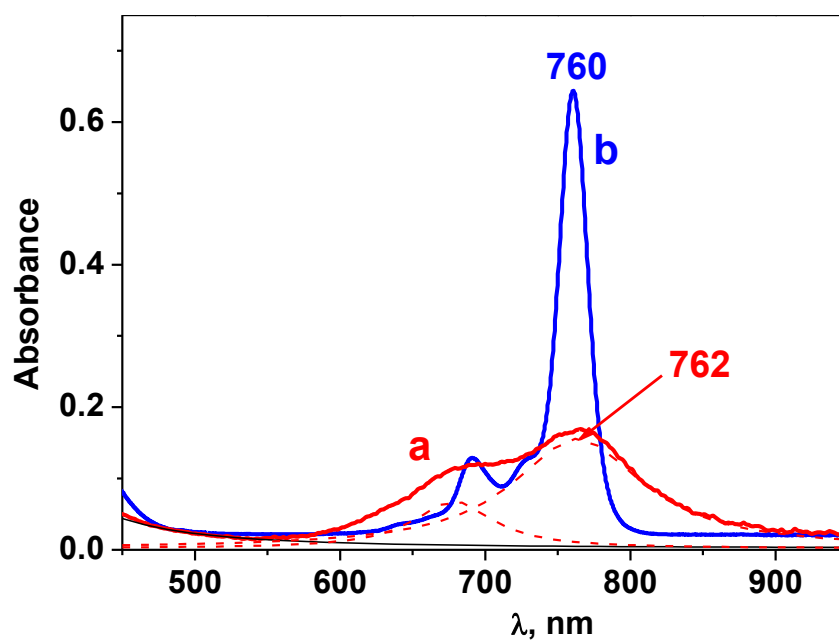


Figure 7. The UV-vis absorption spectra of VOPcCl₁₆ in the thin film (a, red graphic) and its Lorentzian band fit (red dotted lines) as well as the spectra in solution (10⁻⁵ M) of 1-chloronaphthalene (b, blue graphic).