

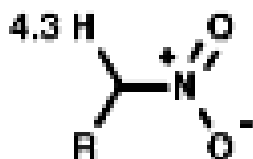
Spectroscopy can explain why nitro compounds have yellow color

IR

The λ_{\max} for the N=O stretch is 1500-1600 cm^{-1} , compared to the C=O stretch at 1650-1800 cm^{-1} .

NMR

For a CH protons, adjacent to the group, the chemical shift, δ , = 4.3, due to electron withdrawing effect;



UV

The nitrogen from aromatic ring causes a pronounced shift of λ_{\max} to longer wavelengths when conjugated to unsaturated p systems, a bathochromic shift. This is why aromatic nitro compounds are often yellow.