

TLC Stains

<u>Stain</u>	<u>Uses</u>	<u>Recipe</u>
<i>p</i> -Anisaldehyde	General purpose stain, particularly good with groups with nucleophilic properties.	Add 15 ml of AcOH and 3.5 mL of <i>p</i> -Anisaldehyde to 350 mL ice cold EtOH. Cautiously add 50 mL concentrated H ₂ SO ₄ dropwise over 60 minutes. Store unused portion at 0°C.
Ninhydrin	Particularly good for amino acids.	Dissolve 1.5 g ninhydrin in 100mL of <i>n</i> -butanol and add 3 mL AcOH.
KMnO ₄	Olefins and other readily oxidized groups.	Dissolve 1.5 g KMnO ₄ , 10 g K ₂ CO ₃ , and 1.25 mL 10% NaOH in 200 mL water.
Cerium Sulfate	General stain, particularly useful for alkaloids.	Make an aqueous solution of 10% Cerium (IV) sulfate and 15% H ₂ SO ₄ .
Morin Hydrate	General reagent. Fluorescently active.	Make up a 0.1 wt% solution in methanol.
Cerium Molybdate	General purpose stain. Requires heating to visualize. aka Hanessian's stain.	Dissolve 0.5g Ce(NH ₄) ₂ (NO ₃) ₆ and 24.0 g of (NH ₄) ₆ Mo ₇ O ₂₄ ·4H ₂ O. Carefully add 28 mL H ₂ SO ₄ , stir for 1 hour and filter if necessary.
2,4-DNP	aldehydes and ketones	Dissolve 12 g of 2,4-dinitrophenylhydrazine, 60 mL of H ₂ SO ₄ , and 80 mL of H ₂ O in 200 mL 95% EtOH.
Bromocresol Green	Acidic (pK _A <5) groups	Add 0.04g bromocresol green to 100 mL absolute EtOH. Slowly drip in a 0.1M solution of NaOH until the solution just turns pale blue.
Phosphomolybdic Acid	General purpose	Dissolve 10 g PMA in 100 mL absolute ethanol