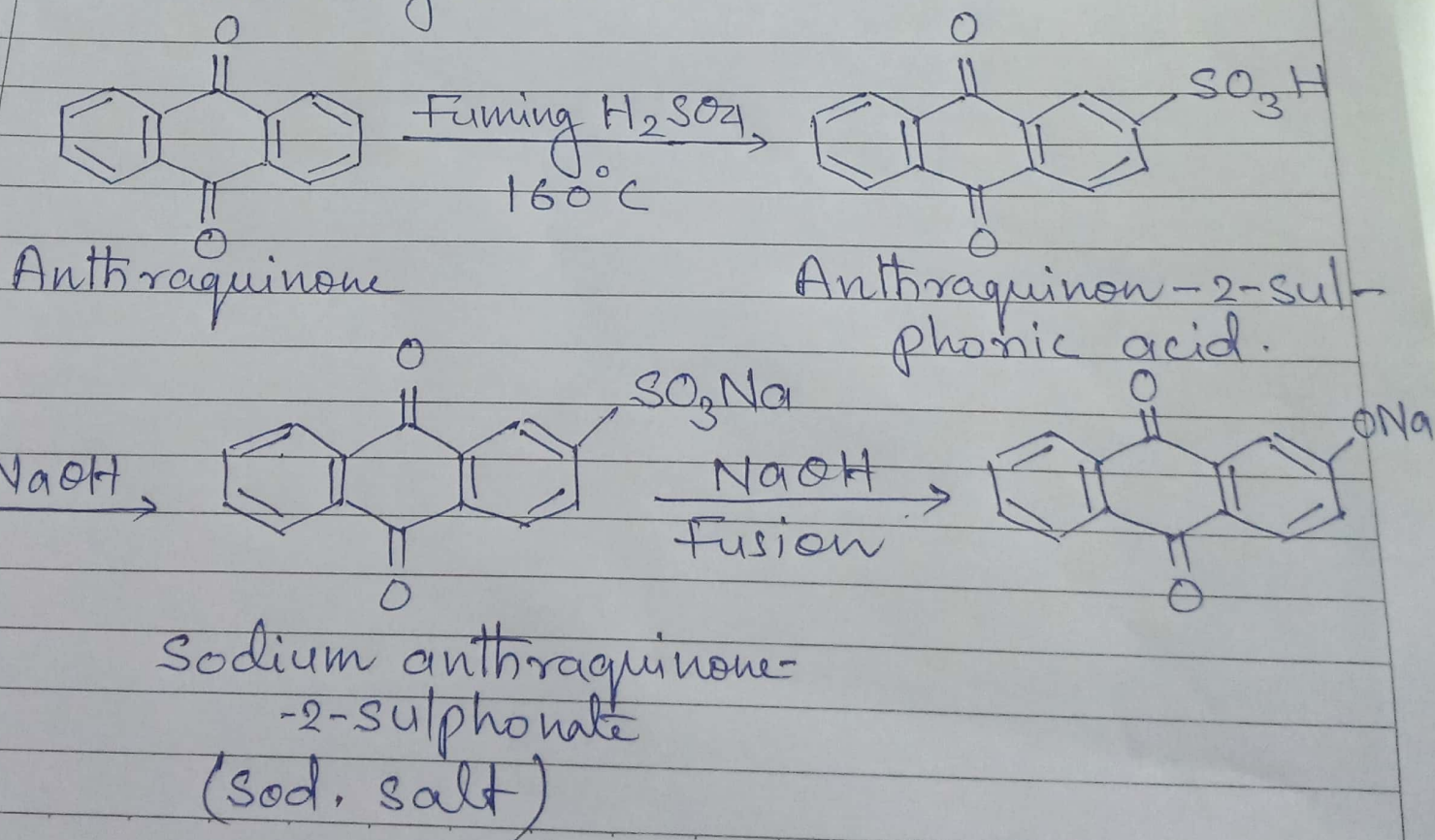


## ⑦ Chemistry and synthesis of Alizarin dye

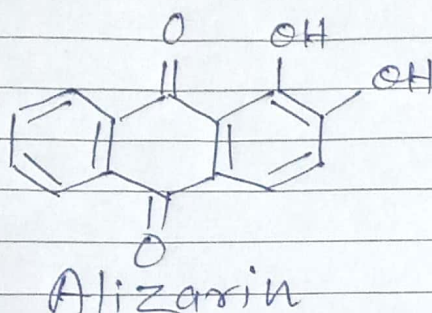
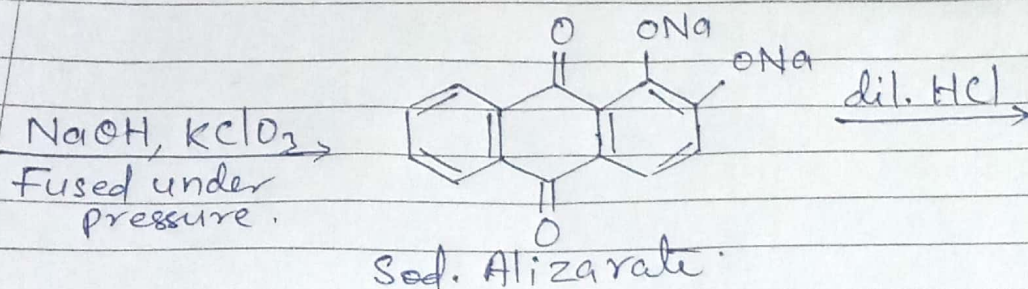
Alizarin is one of the most important anthraquinone dye, with a para quinonoid chromophore. It was ~~ind~~ naturally obtained from the roots of madder plant.

Commercially alizarin is synthesised from anthraquinone by sulphonating it with fuming  $\text{H}_2\text{SO}_4$  at  $160^\circ\text{C}$  to get anthraquinone-2-sulphonic acid which is converted into sodium salt. Sodium salt of anthraquinone-2 is mixed with caustic soda and potassium chlorate and heated under pressure at  $170^\circ\text{C}$ . Acidification of product with dil. HCl gives alizarin.



Teacher's Signature .





Alizarin is a red crystalline solid insoluble in water, but soluble in alcohol and alkali. It is a mordant dye and combines with metallic hydroxide (mordant) to form coloured insoluble compounds called lakes. The colour of the lakes depends upon the cation used in mordant.

$\text{Al}^{3+} \rightarrow \text{red}$

$\text{Ca}^{2+} \rightarrow \text{Bluish red.}$

$\text{Mg}^{2+} \rightarrow \text{violet}$

$\text{Fe}^{3+} \rightarrow \text{violet etc.}$

Uses :-

- 1) It is applied to wool with a chromium mordant and is quite fast to light and washing.
- 2) It is applied to cotton with aluminium gives red colour.
- 3) It is also used as purgative (remove constipation).

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