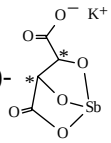
FLOW CHART FOR PREPARATION OF (+)-$Co(phen)_3^{3+}$

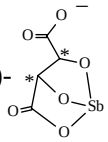
cobalt(II) chloride hexahydrate + 1,10-phenanthroline — STARTING MATERIALS

↓

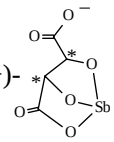
(-)-$Co(phen)_3^{2+}$ ⇌ (+)-$Co(phen)_3^{2+}$ — SOLUTION OF RACEMIC $Co(phen)_3^{2+}$ IN WHICH THE (-) AND (+) ENANTIOMERS ARE RAPIDLY INTERCONVERTING

↓ (+)-

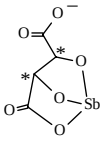


(+)-$Co(phen)_3^{2+}$ ((+)- )$_2$ — PRECIPITATED CHIRAL (+)-Co(II) COMPLEX + SUPERNATANT

↓ remove supernatant

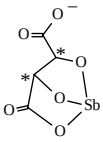
(+)-$Co(phen)_3^{2+}$ ((+)- )$_2$ — SOLID CHIRAL Co(II) COMPLEX WITH (+)-ANTIMONY TARTRATE AS THE COUNTERION

↓
1. add deionized water
2. oxidize Co(II) to Co(III) with Cl_2
3. remove excess Cl_2

(+)-$Co(phen)_3^{3+}$ + (+)-  — SOLUTION OF CHIRAL Co(III) COMPLEX and (+)-ANTIMONY TARTRATE

MEASURE THE OPTICAL ACTIVITY OF THE SOLUTION

↓ $NaClO_4$

(+)-$Co(phen)_3^{3+}(ClO_4^-)_3$ + (+)-  — SOLID Co(III) PERCHLORATE and SUPERNATANT CONTAINING (+)-ANTIMONY TARTRATE

WEIGH THE DRY (+)-$Co(phen)_3^{3+}(ClO_4^-)_3$

MEASURE THE RESIDUAL OPTICAL ACTIVITY OF THE SUPERNATANT