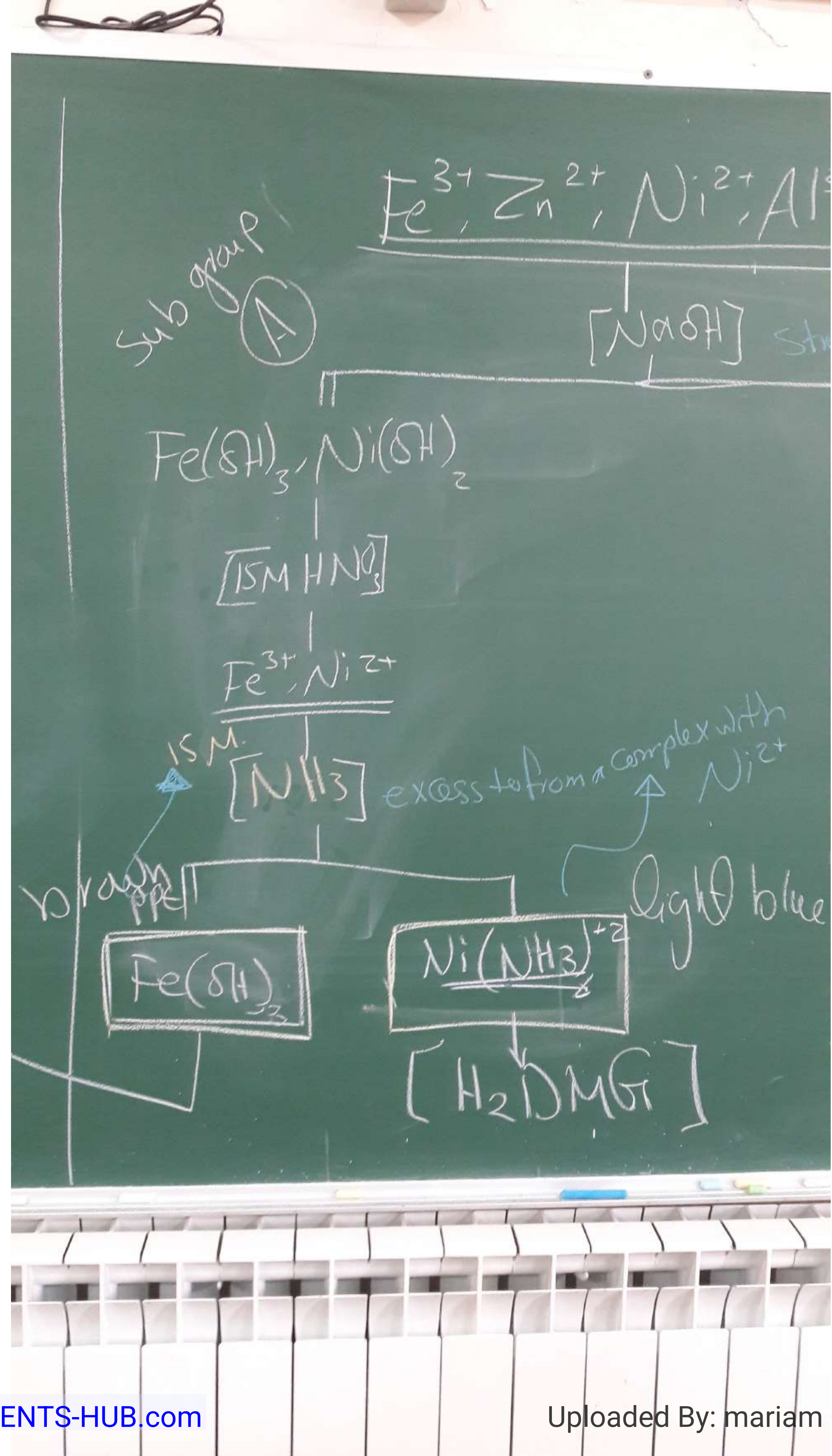
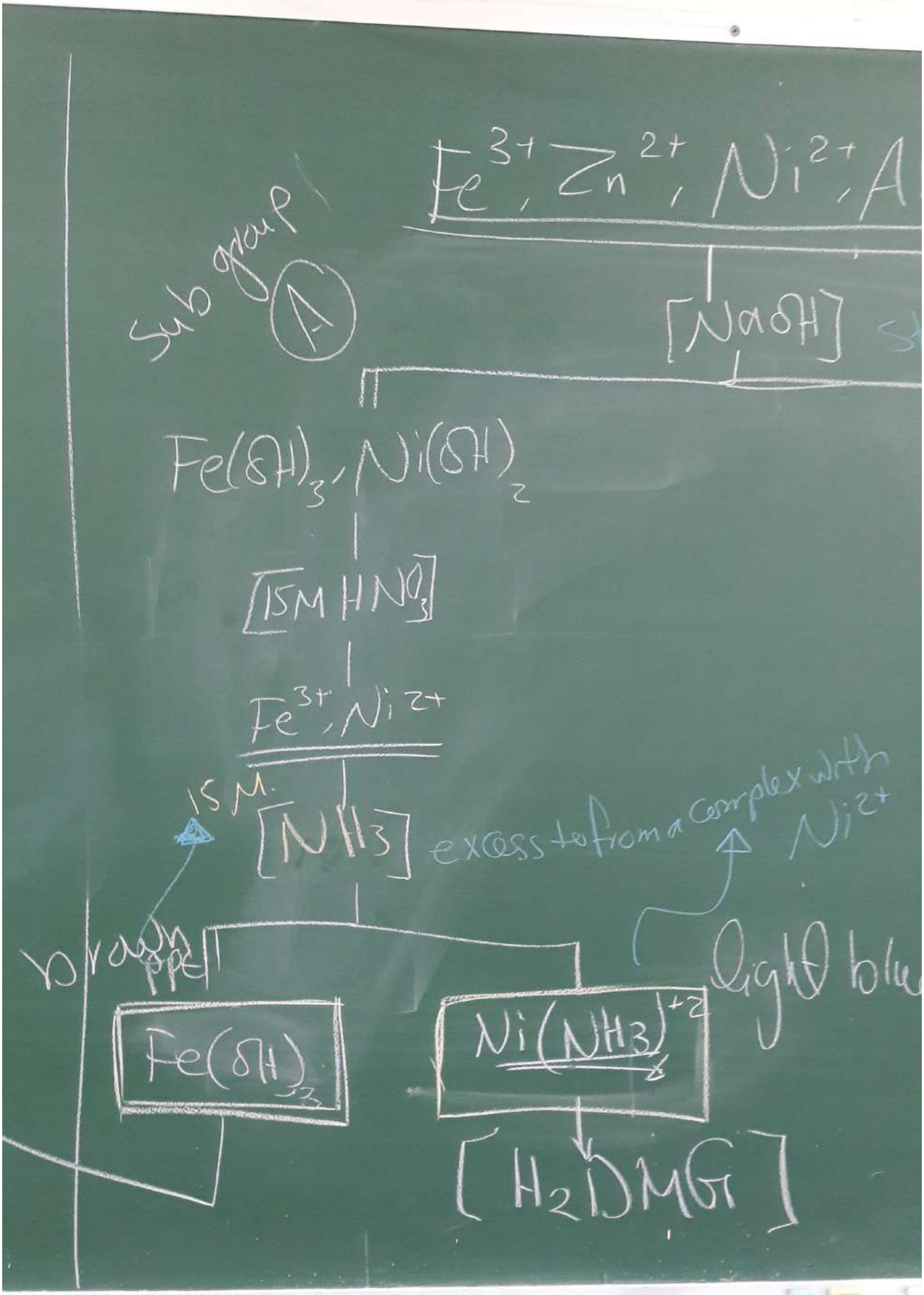
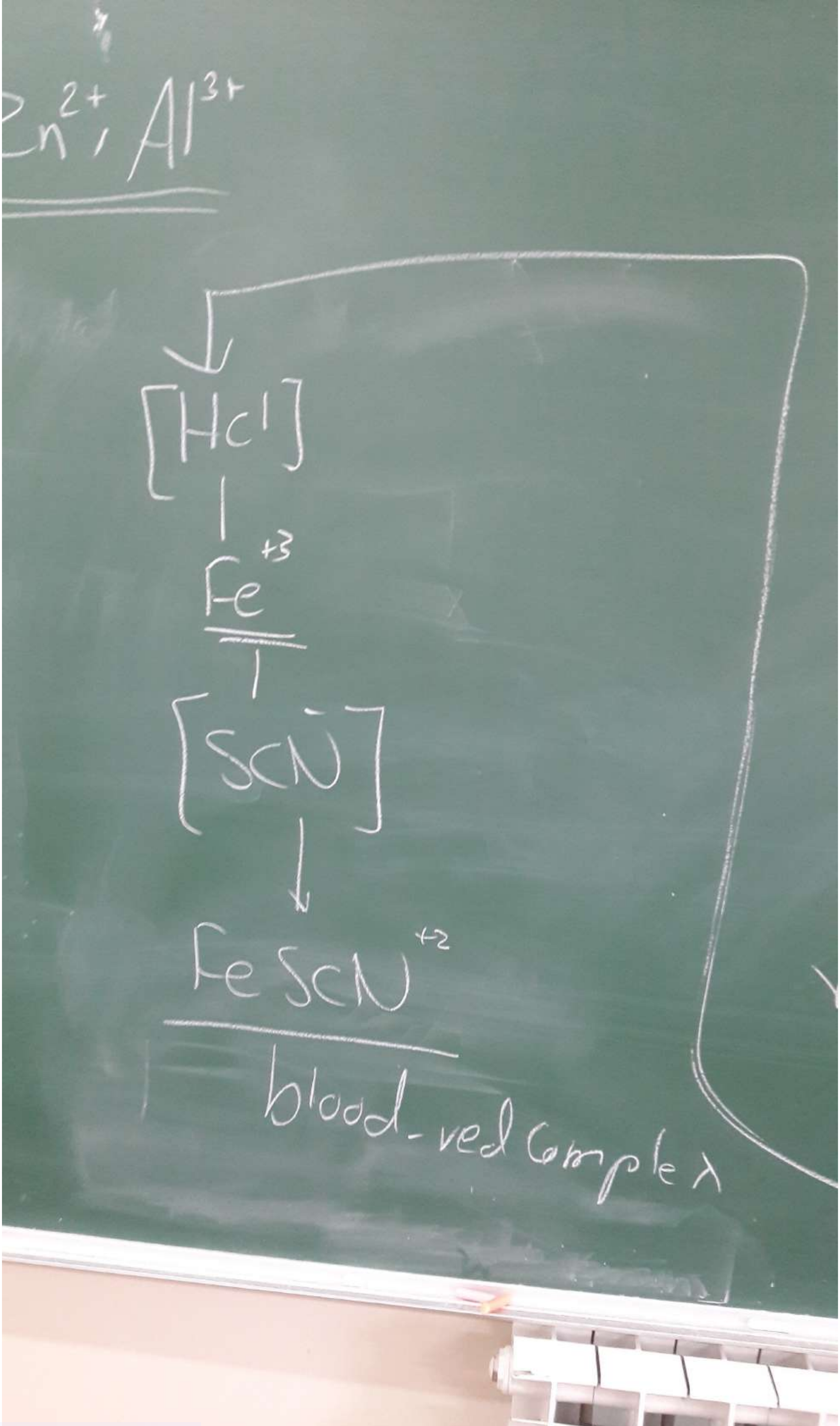

Sub group (A)
$Fe^{3+}, Zn^{2+}, Ni^{2+}, Al$
[NaOH] st
$Fe(OH)_3, Ni(OH)_2$
[15M HNO_3]
Fe^{3+}, Ni^{2+}
15 M.
[NH_3]
excess to from a complex with Ni^{2+}
brown ppt
$Fe(OH)_3$
$Ni(NH_3)^{+2}$
light blue
[H_2DMG]


Sub group Ⓐ
$Fe^{3+}, Zn^{2+}, Ni^{2+}, A$
[NaOH]
S
$Fe(OH)_3, Ni(OH)_2$
[15M HNO_3]
Fe^{3+}, Ni^{2+}
15M.
[NH_3]
excess to from a complex with Ni^{2+}
brown ppt
$Fe(OH)_3$
$Ni(NH_3)^{+2}$
light blu
[H_2DMG]



Zn^{2+}, Al^{3+}

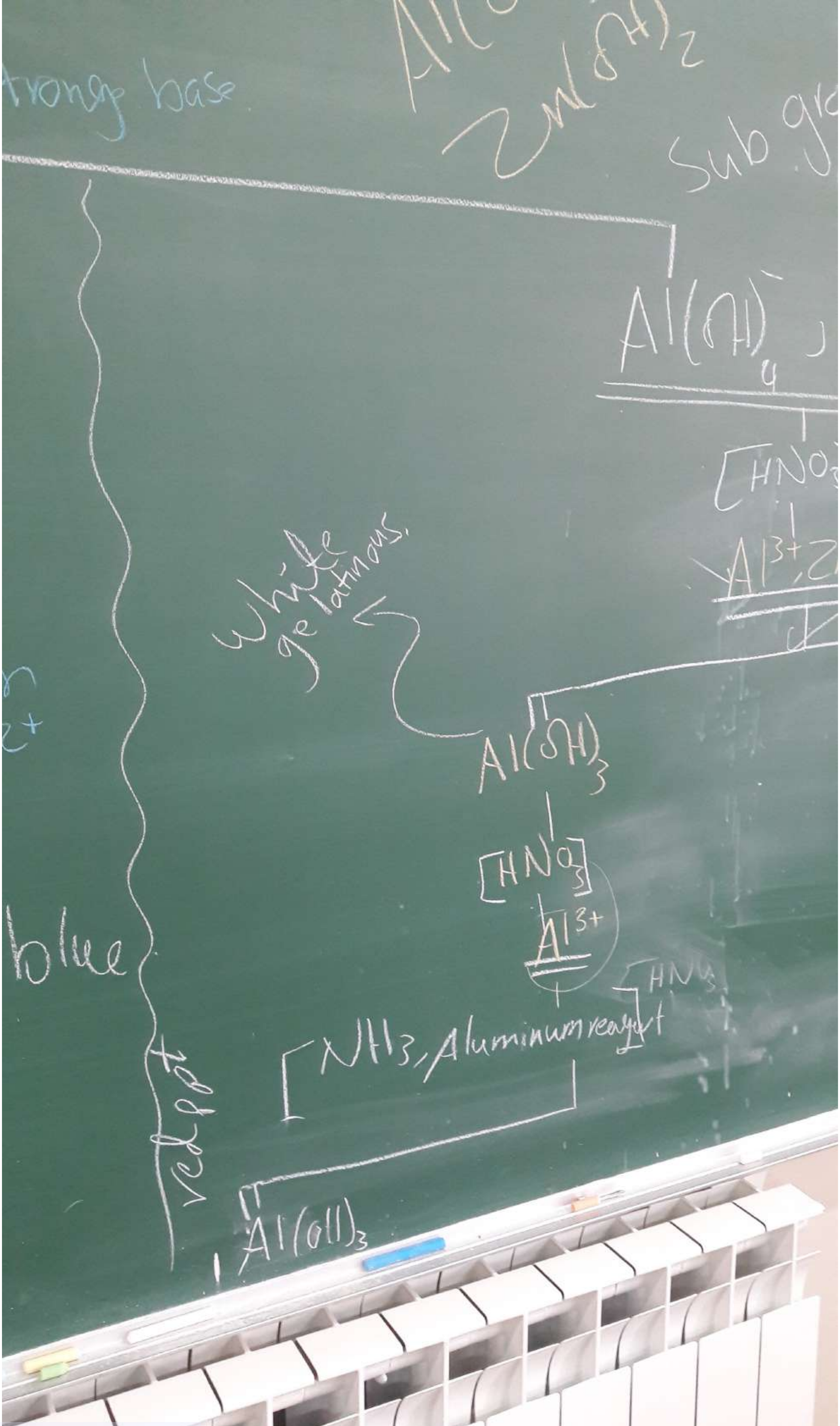
[HCl]

Fe^{+3}

[SCN^-]

$FeSCN^{+2}$

blood-red complex


trong base
Al(O
Zn(OH)2
Sub gr
Al(OH)4-
[HNO3
Al3+, Z
white gelatinous.
Al(OH)3
[HNO3]
Al3+
HNO3
NH3, Aluminum reagent
2+
blue
red ppt
Al(OH)3

$Fe^{3+}, Zn^{2+}, Ni^{2+}, Al^{3+}$

[NaOH] Strong base

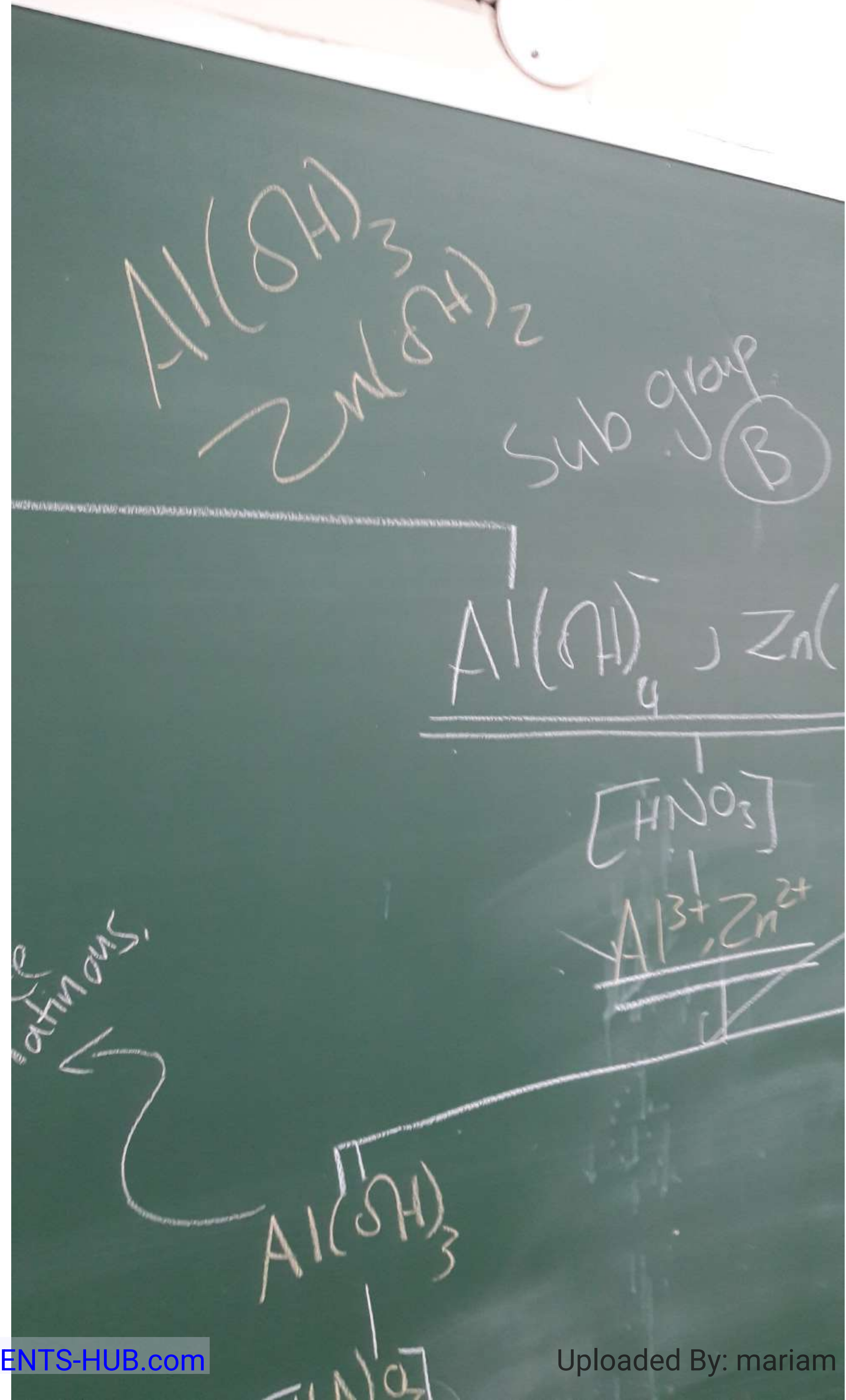
$(OH)_2$

excess to from a complex with Ni^{2+}

light blue

$Ni(NH_3)^{+2}$

wh



$Al(OH)_3$

$Zn(OH)_2$

Sub group (B)

$Al(OH)_4^-$, Zn(

$[HNO_3]$

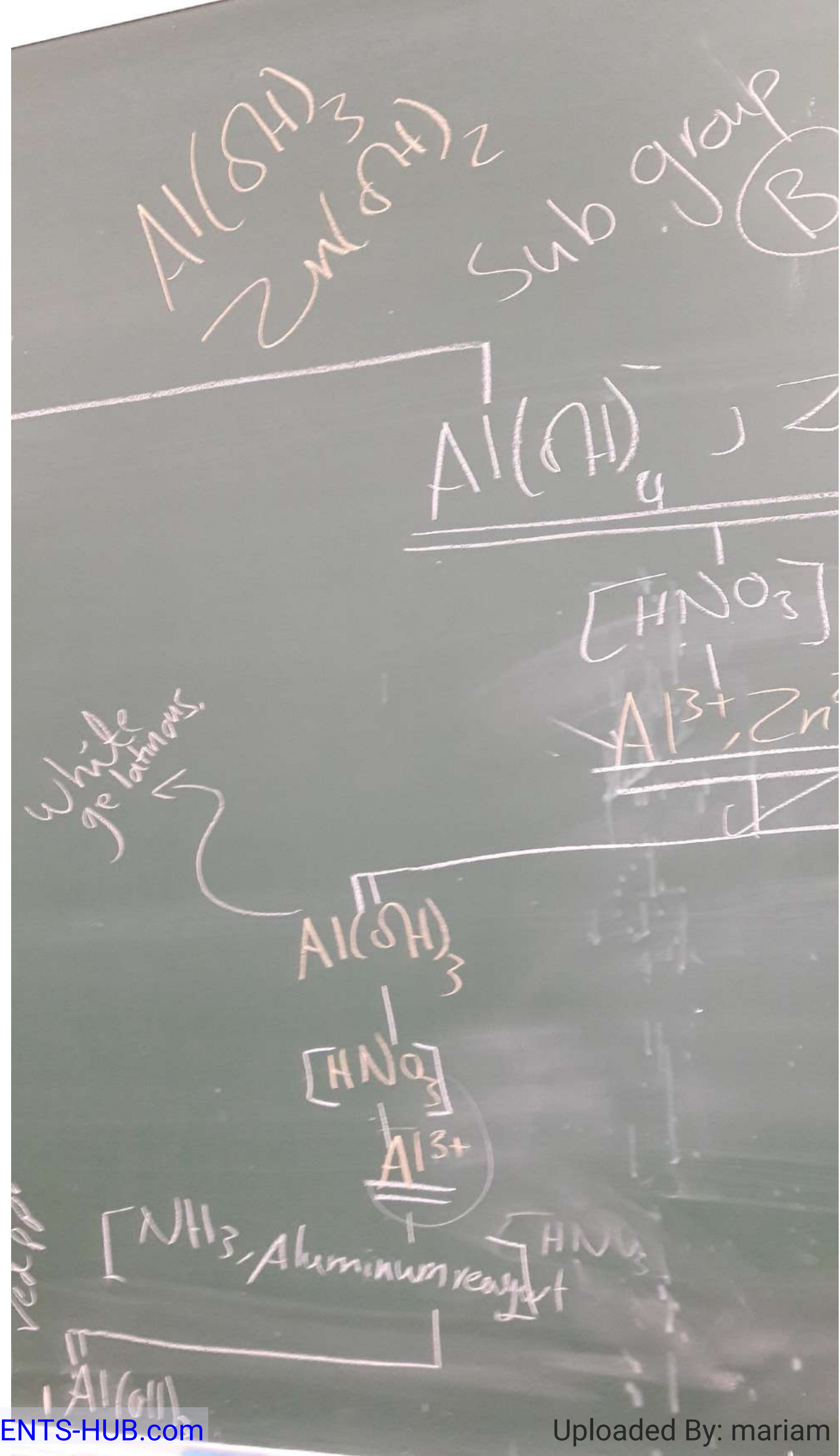
Al^{3+}, Zn^{2+}

e

atinous.

$Al(OH)_3$

[HNO


$Al(OH)_3$
$Zn(OH)_2$
Sub group (B)
$Al(OH)_4^-$, Z
$[HNO_3]$
Al^{3+}, Zn
white gelatinous.
$Al(OH)_3$
$[HNO_3]$
Al^{3+}
$[NH_3$, Aluminum reagent$]$
$[HNO_3]$
red ppt
$Al(OH)_3$

$OH)_2$

Sub group (B)

$Al(OH)_4^-$, $Zn(OH)_4^{-2}$

[HNO_3]

Al^{3+}, Zn^{2+}

[NH_3]

$H)_3$

$3+$

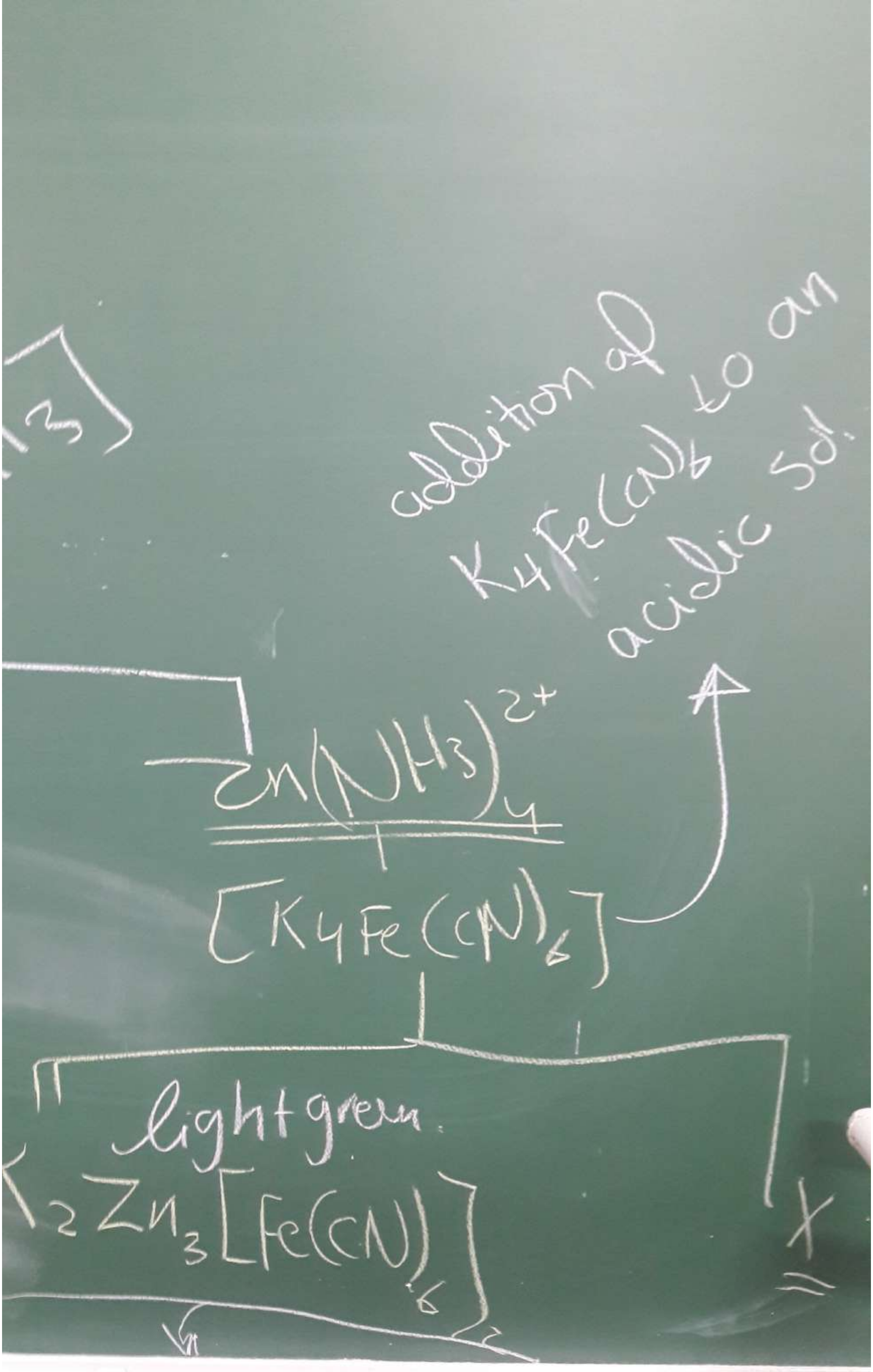
HNO_3

reagent

light

K

K_2Zn



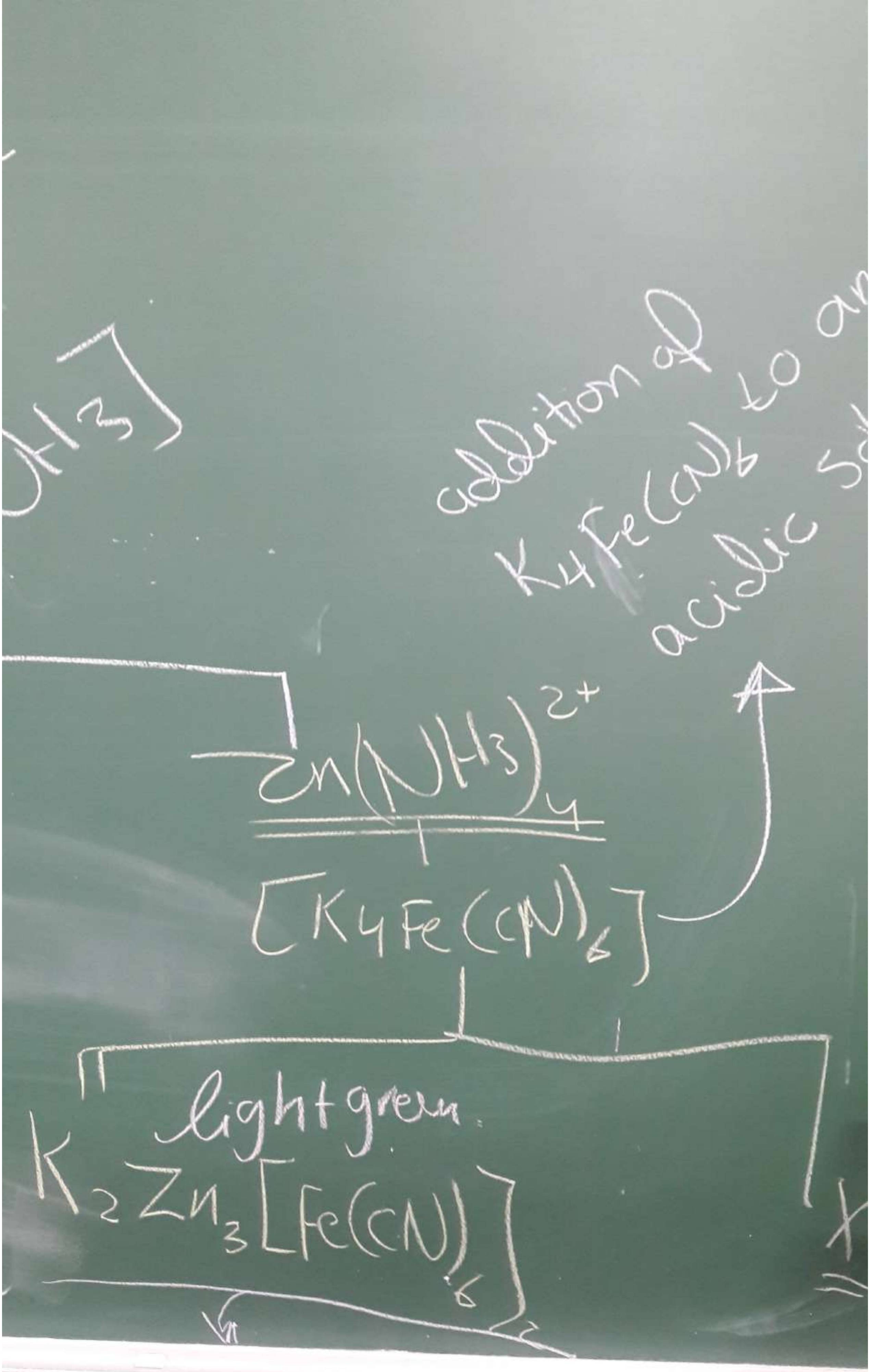
$Zn(NH_3)_4^{2+}$

$[K_4Fe(CN)_6]$

addition of $K_4Fe(CN)_6$ to an acidic sol.

light green

$K_2Zn_3[Fe(CN)_6]_2$



$H_3]$

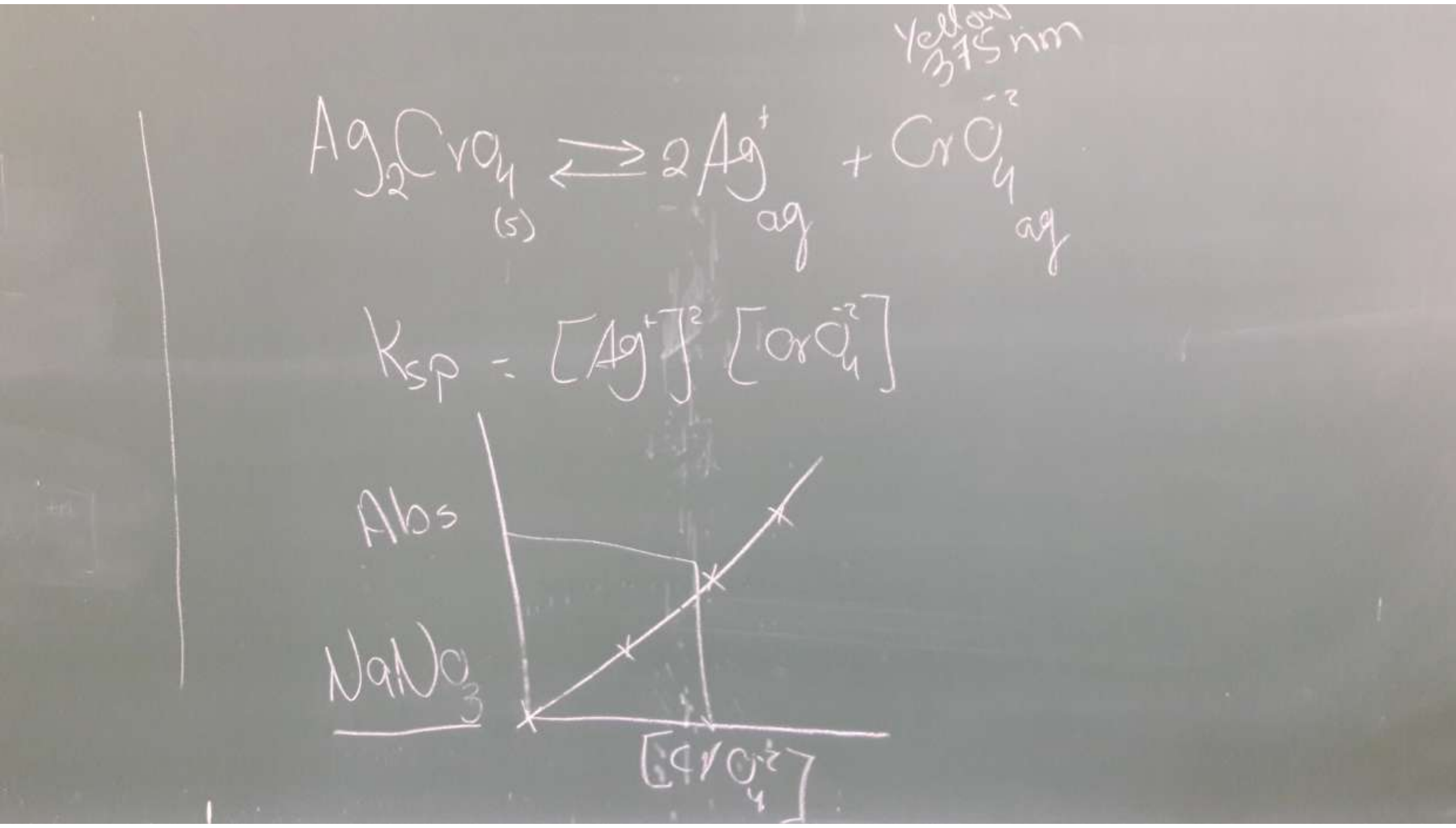
addition of $K_4Fe(CN)_6$ to a
acidic s

$Zn(NH_3)_4^{2+}$

$[K_4Fe(CN)_6]$

light green

$K_2Zn_3[Fe(CN)_6]_2$

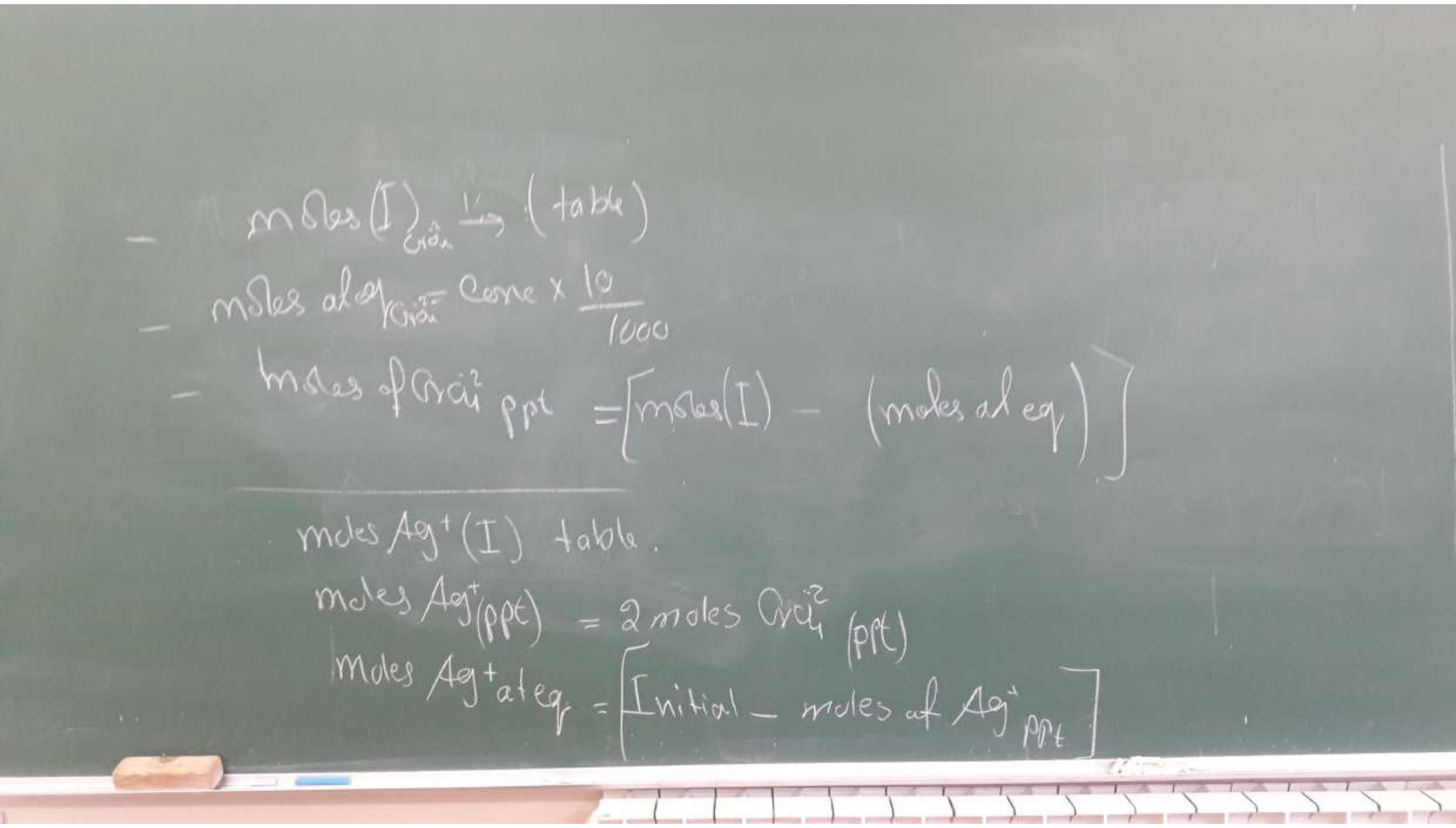


Yellow 375 nm

$$Ag_2CrO_{4(s)} \rightleftharpoons 2Ag^{+}_{aq} + CrO_{4\,aq}^{-2}$$

$$K_{sp} = [Ag^{+}]^2 [CrO_4^{-2}]$$

Abs
NaNO3
[CrO4-2]



- moles $(I)_{CrO_4^{-2}} \xrightarrow{1'} $ (table)
- moles at eq$_{CrO_4^{-2}}$ = Conc × $\frac{10}{1000}$
- moles of CrO_4^{-2} ppt $= \left[\text{moles}(I) - (\text{moles at eq})\right]$

---

moles Ag^+ (I) table.

moles $Ag^+_{(ppt)}$ = 2 moles CrO_4^{-2} (ppt)

Moles Ag^+ at eq $= \left[\text{Initial} - \text{moles of } Ag^+_{ppt}\right]$