

## Separation and identification of metal cations by TLC

Experiment

No #12

21-1-2019

### Separation and identification of metal cation by TLC:

#### Apparatus:

Beaker, test tubes, capillary tube, test tube rack, pipette, Sucker.

#### Chemicals:

Solution of Ni, Co & Fe, distilled H<sub>2</sub>O.

#### Theory:

TLC is planar, adsorption chromatography as S. phase is solid but M. phase is liquid so it is heterogenous chromatography. It is used to separate non-polar samples so called normal phase chromatography.

#### Procedure:

Slurry was made

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Chemicals:

solution of Ni, Co & Fe,  
distilled H<sub>2</sub>O.

Mobile

Phase:

acetone : 6M HCl  
3 : 1

Stationary

Phase:

silica : plaster of paris  
9 : 1

Observation & Calculation:

by silica and plaster of paris in  
9:1 and activated in oven. Then  
take spots of samples on line drawn.  
After that took mobile phase in beaker  
and establish equilibrium. Then placed  
plates in beaker and wait until solvent  
front raised 70%, dried and marked.

### Result:

$R_f$  values of mixture was  
about 0.8 which shows it consists  
of iron metal.

### Discussion:

Glass plates were used  
for TLC having homogeneous coating  
of silica and plaster of paris  
which enhance binding capacity.

Sr No	metal cation	R <sub>f</sub> value	
1	Ni	$\frac{1.2}{4}$	= 0.3
2	Co	$\frac{2.1}{4}$	= 0.5
3	Fe	$\frac{3.3}{4}$	= 0.8
4	Mixture	$\frac{3.2}{4}$	= 0.8

### Result

R<sub>f</sub> value of mixture  
was about 0.8 which shows  
it consist of iron metal.

