

## Appendix A

The Iodometric titration used to determine the decrease in sodium sulfite concentration during sulfite oxidation technique of interfacial area determination is as under:

### The Iodometric method

#### a) Preparation of 0.1N Iodine solution

- i. Dissolve 20 gms of Potassium Iodide (KI) in 300 ml distilled water.
- ii. Add 13 gms of ground iodine powder in above prepared 300 ml KI solution.
- iii. Swirl the solution until the powder iodine dissolved in the KI solution.
- iv. Filter the above prepared solution through glass wool.
- v. Washing the glass wool with distilled water and make the final volume 1000 ml using distilled water.
- vi. The solution thus prepared is approximately 0.1N Iodine solution.

#### b) Analytical Procedure

- i. Collect about 5-6 ml solution from column through sampling valve in a measuring cylinder.
- ii. Take 2 ml solution from above measuring cylinder in a 250 ml conical flask.
- iii. Add about 2-3 drops of 1% starch solution as a indicator in above flask.
- iv. Titrate it against 0.1N iodine solution.
- v. Add 0.1N iodine solution till color changes to dark blue.
- vi. Note down the reading.
- vii. Repeat the above procedure and take second reading.
- viii. Find out the sulfite concentration by  $N_1V_1 = N_2V_2$ .



### XRD results of zinc dodecyl sulfate

<b>Caption</b>	<b>Angle 2<math>\Theta</math></b>	<b>d value Angstrom</b>	<b>Intensity Count</b>	<b>Intensity %</b>
d=4.91603	18.030	4.91603	2688	69.7
d=4.78970	18.509	4.78970	2862	74.3
d=4.50630	19.685	4.50630	3097	80.4
d=4.38178	20.250	4.38178	3537	91.8
d=4.32340	20.526	4.32340	3659	95.0
d=4.09235	21.699	4.09235	3490	90.6
d=3.94395	22.526	3.94395	3597	93.4
d=3.78073	23.512	3.78073	3507	91.0
d=3.50541	25.388	3.50541	2818	73.1
d=3.17739	28.060	3.17739	2535	65.8
d=3.07934	28.973	3.07934	2808	72.9
d=3.03604	29.395	3.03604	2704	70.2
d=2.87626	31.068	2.87626	2558	66.4
d=2.81805	31.727	2.81805	3854	100.0
d=2.70076	33.143	2.70076	2793	72.5
d=2.64220	33.900	2.64220	3092	80.2
d=2.57279	34.843	2.57279	2344	60.8
d=2.38179	37.739	2.38179	2378	61.7
d=1.96779	46.090	1.96779	1866	48.4
d=1.88750	48.172	1.88750	1643	42.6
d=1.74730	52.316	1.74730	1578	41.0
d=1.56449	58.992	1.56449	1439	37.3
d=1.55912	59.216	1.55912	1451	37.7

### Components formed in zinc dodecyl sulfate

JCPDS card no.	Reported values	Components	FWHM(30)	Crystallite Size
001-1075	18.7%	ZnSO <sub>4</sub> (Zinc Sulfate)	0.933	87.2 Å
031-1474	4.1%	ZnSO <sub>3</sub> (Zinc Sulfite)	0.886	91.8 Å
052-2281	11.4%	((C <sub>2</sub> H <sub>4</sub> O <sub>2</sub> ) <sub>z</sub> ) <sub>1</sub> - x(C <sub>12</sub> H <sub>25</sub> NaO <sub>4</sub> S) <sub>x</sub> (Sodium dodecyl sulfate polyethylene glycol)	0.81	100.4 Å
039-1996	44.8%	C <sub>12</sub> H <sub>25</sub> NaO <sub>4</sub> S (Sodium lauryl sulfate)	0.902	90.2 Å
048-1120	20.9%	K <sub>2</sub> Zn(SCN) <sub>4</sub> ·3H <sub>2</sub> O (Potassium Zinc Thiocyanate Hydrate)	0.967	84.1 Å