

PREPARATION OF SAFRANINE O IMMOBILIZED ACRYLIC  
MICROSPHERES AND COBALT(II) ION IMMOBILIZED  
MICROSILICA FOR OPTICAL DETECTION OF  
NITROGEN COMPOUND

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AND COBALT(II) ION IMMOBILIZED MICROSILICA FOR OPTICAL  
DETECTION OF NITROGEN COMPOUND

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Thesis submitted in fulfilment of the requirements  
for the award of the degree of  
Master of Science in Industrial Chemistry

Faculty of Industrial Sciences and Technology  
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MARCH 2016

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**LIST OF SYMBOLS**

$\nu$	Frequency
$\lambda$	Wavelength

**LIST OF ABBREVIATIONS**

$[\text{Co}(\text{NH}_3)_6]^{2+}$	Hexaamminecobalt(II) complex ion
$\text{Ca}^{2+}$	Calcium ion
CE	Capillary electrophoresis
$\text{Co}^{2+}$	Cobalt(II) ion
DMPP	Dimethoxy-2-phenylacetophenone
$\text{Fe}^{2+}$	Ferrous ion
$\text{Fe}^{3+}$	Ferric ion
FESEM	Field emission scanning electron microscopy
FTIR	Fourier transform infrared spectroscopy
GC	Gas chromatography
GC-MS	Gas chromatography-mass spectrometer
HCl	Hydrochloric acid
HDDA	1,6-hexanediol diacrylate
HPLC	High performance liquid chromatography
IC	Ion chromatography
$\text{K}^+$	Potassium ion
KCl	Potassium chloride
$\text{Mg}^{2+}$	Magnesium ion
$\text{Na}^+$	Sodium ion
nBA	n-butyl acrylate
$\text{NH}_3$	Ammonia
$\text{NH}_4^+$	Ammonium ion
$\text{NO}_2^-$	Nitrite Ion

$\text{NO}_3^-$	Nitrate ion
Poly(nBA)	Poly(n-butyl acrylate)
SLS	Sodium lauryl sulfate
SO	Safranin O
$\text{SO}_4^{2-}$	Sulphate ion
TEOS	Tetraethyl orthosilicate