STUDIES ON NANOENCAPSULATION OF NONPOLAR MOLECULES BY CYCLODEXTRIN AND CYCLODEXTRIN BASED POLYMERS

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CERTIFICATE

This is to certify that the thesis entitled "**Studies on Nanoencapsulation of Nonpolar molecules by cyclodextrin and cyclodextrin based polymers**" submitted by Mr. Gangadhar Tammana to The M. S. University of Baroda, Vadodara for the award of Ph.D degree in Applied Chemistry incorporates the original research work carried out by him under my supervision.

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DECLARATION

I state that the work presented in this thesis entitled "**Studies on Nanoencapsulation of Nonpolar molecules by cyclodextrin and cyclodextrin based polymers**" comprises independent investigations carried out by me under the guidance of Prof. C. N. Murthy. Wherever references have been made to the work of others, it has been clearly indicated with the source of information under the references section. The matter presented in this thesis has not been submitted elsewhere for the award of any other degree.

Signature of the Candidate

(Gangadhar Tammana)

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Dedicated To

My Parents

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Uncle

Subhas Chandra Bose

Wife

Naga Devi

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Abbreviations

AR	Analytical Reagent
BCS	Biopharmaceutical Classification System
C_{60}	[60]Fullerene
C_{70}	[70]Fullerene
CBZ	Carbamazepine
CC	Cyanuric Chloride
$CDCl_3$	Deuterated Chloroform
CDs	Cyclodextrins
CE	Capillary Electrophoresis
CGTase	Cyclodextrin Glycosyltransferase
CM	Carboxymethyl
CPDX	Cefpodoxime proxetil
D_2O	Deuterium Oxide
DCC	*N*,*N'*-Dicyclohexylcarbodiimide
DMA	Dimethyacetamide
DMAO	Dimethyl(aminomethyl)phosphine oxide
DMF	*N*,*N'*-Dimethylformamide
DMSO	Dimethylsulfoxide
DMSO-d_6	Deuterium Dimethylsulfoxide
DNA	Deoxy Ribonucleic Acid
DS	Degree of substitution
EPH	Epichlorohydrine
FTIR	Fourier Transform Infrared
HIV	Human Immunodeficiency Virus
HPLC	High Performance Liquid Chromatography
K_b	Binding Constant
K_{SV}	Stern-Volmer Constant
Me_4Si	Tetramethyl Silane
MeCN	Acetonitrile
Mw	Molecular weight
MWCO	Molecular Weight Cut Off

NMR	Nuclear Magnetic Resonance
ppm	Parts Per Million
RM	Randomly Methylated
RT	Room Temperature
SLS	Static Light Scattering
TBDMS	*ter*-Butyldimethylsilyl Chloride
TEM	Transmission Electron Microscopy
TGA	Thermogravimetric Analysis
THF	Tetrahydrofuran
TLC	Thin Layer Chromatography
TMS	Tetramethyl Silane
TsCl	Tosyl Chloride
UV-Vis	Ultraviolet Visible
XRD	X-Ray Diffraction