

# REPORT FOR UTILIZATION OF DST- PURSE GRANT

Sanction Letter No.: SR/S9/Z-23/2010/43, dated 16-03-2011



Sardar Patel University  
Vallabh Vidyanagar- 388 120  
Gujarat, INDIA

## Report for Utilization of DST-PURSE Grant

### 1. Name of University:

Sardar Patel University,  
Vallabh Vidyanagar – 388120,  
Gujarat

### 2. Address for communication

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3. **Date and Ref. No. of DST Sanction Letter:** SR/S9/Z-23/2010/43 dated 16<sup>th</sup> March 2011

### 4. Total Amount Released under the program

Sanctioned: Rs. 600.0 lakhs  
Released: Rs. 200.0 lakhs

### 5. Expenditure till 31<sup>st</sup> March 2012

- (A) Actual expenditure  
F. Y. 2011-12: Rs. 18, 14,740 /-  
F. Y. 2012-13: Rs. 1, 26, 55,842 /-  
Total Rs. 1, 44, 70,582 /-
- (B) Committed expenditure in F. Y. 2012-13  
F. Y. 2012-13: Rs. 59, 78,743 /-
- Total: (A) + (B): Rs. 2, 04, 49,325 /-

## 6. Details of the Grant

Sr No.	(A) Flexible Component	Amount Received with Date (Rs in lakhs) March 2011
1.	Equipment	130.0
2.	Consumables	15.0
3.	Research Infrastructure Facility	15.0
4.	Network & Computational Facility	10.0
	Total (A)	170.0
Sr No.	(B) Fixed Component	
1.	Manpower	20.0
2.	Contingencies	2.0
3.	Travel	2.0
4.	Seminar/Workshop	2.0
5.	Maintenance	4.0
	Total (B)	30.0
	Total (A+B)	200.0

## 7. Details of Utilization of PURSE Grant under the 'Flexible Component':

### 7a. Sanctioned Major Equipment Ordered/ Purchased/Installed:

1<sup>st</sup> April 2011 to 30<sup>th</sup> November 2012 (1<sup>st</sup> F.Y. and 2<sup>nd</sup> F. Y.): Amount: Rs. 1, 36, 41,882.00

Sr. No.	Name (with Model & Make)	Order Date	Installation Date	Cost in INR (Total Cost of the Equipment after paying all the charges)
<b>(A) Purchased/Installed</b>				
1.	Ultra Fast Triple Quadropole Liquid Chromatography and Mass Spectrometer Model: LCMS 8030 With Nexera UHPLC Make: Shimadzu, Japan	25/06/2012	10/11/2012	77,62,734.00
2.	CCD Single Crystal Diffractometer Model :Kappa Apex II Sr. No. 4027	07/02/2008	05/07/2009	8,55,979.00 (Escalation Cost) Adjustment
			Total (A):	86,18,713.00
<b>(B) Ordered</b>				
3.	Spectrofluorophotometer Model: RF-5301PC Make: Shimadzu, Japan	30/06/2012		8,25,000.00
4.	Inverted Fluorescent Phase Contrast Research Microscope Make: Carl-Zeiss, Germany	06/10/2012		18,40,000.00
5.	Research Rotatory and Oscillatory	29/11/2012		17,24,590.00

	Rheometer Model: MCR 102 Modular Compact Make: Anton Paar, Graz. Austria			
6.	Millipore Water Purification System, Model: Prefiltration Kit + Elix-3+ 50L Storage Reservoir + Synergy Pure System Make: Merck Millipore, India Pvt. Ltd.	02/11/2012		6,33,579.00
			Total (B):	50,23,169.00
Total (A+B):				1,36,41,882.00

### 7 b. Particulars for Consumables procured (Chemicals, Supplies etc.)

Sr. No.	Department	1 <sup>st</sup> Financial Year (1-04-2011 to 31-03- 2012) Expenditure (INR)	2 <sup>nd</sup> Financial Year (1-04-2012 to 30-11-2012) Expenditure (INR)	Total (INR)
1	Chemistry	6,13,565.00	2,84,547.00	8,98,112.00
2	Physics	1,68,504.00	2,16,449.00	3,84,953.00
3	Materials Science	1,59,698.00	3,66,327.00	5,26,025.00
4	Pharmaceutical Science	2,04,947.00	-----	2,04,947.00
5	Biosciences	-----	2,57,356.00	2,57,366.00
6	Electronics	-----	3,08,100.00	3,08,100.00
	Total in INR	11, 46,714.00	14,32,779.00	25,79,493.00

Please see below for Complete Details:

#### Consumables: 1-April-2011 to 31-March-2012 (1<sup>st</sup> F.Y.): Amount: Rs. 11, 46, 714.00

Sr. No.	Name of the Chemical/ Supplies	Quantity	Make/ Grade
1	Dehydro Acetic Acid	1*100gm	Sigma
2	Antimony Pentachloride	1*50gm	Sigma
3	Diethyl Carbonate	1*100ml	Sigma
4	2-Hydroxy Propiophenone	1*25gm	Sigma
5	(3- Acrylamide Propyl )Trimethyl Ammonium Chloride	1*50ml	Sigma
6	N- Isopropylacrylamide	1*50gm	Sigma
7	4- Vinyl pyridine	2*500ml	Sigma
8	Rhodium Trichloride	2*1gm	Sd's
9	Ruthenium Trichloride	2*10gm	Sd's
10	4,5,6,7-Tetrahyelo (3,26) Thienol	5*5gm	"Alfa" Aesor
11	Guanidine	1*250gm	"Alfa" Aesor
12	P-Hydro Acetophenone	1*500gm	SRL
13	Selenium Dioxide	1*100gm	SRL

14	Sodiummethoxide	1*500gm	SRL
15	2-Am-5-Chl-Benzphe	1*100gm	SRL
16	Cinnamoyl Chloride	4*500ml	SRL
17	Vinyl Bromide	1*100ml	"Spectro"chem
18	2-amino acetophenone	2*10gm	"Spectro"chem
19	Trans-Cinnamaldehyde	1*500gm	"Spectro"chem
20	1-bromo-2-chloro ethane	1*100gm	"Spectro"chem
21	Allyl Bromide	2*100ml	"Spectro"chem
22	Barbituric Acid	1*100gm	"Spectro"chem
23	Ethyl Bromide	1*250ml	"Spectro"chem
24	Propyl Bromide	1*50gm	"Sigma-Aldrich"Chemicals
25	Chloroplatinic Acid	1*1gm	"Sigma-Aldrich"Chemicals
26	2-naphthyl boronic acid	1*5gm	"Sigma-Aldrich"Chemicals
27	Phenyl Boronic acid 1,3-propondiol	1*1gm	"Sigma-Aldrich"Chemicals
28	1-methyl-benzimidazole	1*5gm	"Sigma-Aldrich"Chemicals
29	P-Toly hydrazine hydrochloride	1*25gm	"Sigma-Aldrich"Chemicals
30	2-hydroxy-4-methoxy benzldehyde	2*25gm	"Sigma-Aldrich"Chemicals
31	4-chlorophenyl Hydrazine hydrochloride	4*25gm	"Sigma-Aldrich"Chemicals
32	3-pyridine Carboxaldehyde	1*100gm	"Sigma-Aldrich"Chemicals
33	EP Adjustable Vol. Pipette 0.1-2.5µl	1	"Merk" Lab App
34	EP Adjustable Vol. Pipette 0.5-10µl	3	"Merk" Lab App
35	EP Adjustable Vol. Pipette 2-20µl	2	"Merk" Lab App
36	EP Adjustable Vol. Pipette 10-100µl	2	"Merk" Lab App
37	EP Adjustable Vol. Pipette 100-1000µl	2	"Merk" Lab App
38	Polystyrene-block polyacrylic acid	1*500mg	"Sigma Make" Chemicals
39	Poly(acrylic acid) partical Sodium Salt	1*1Kg	"Sigma Make" Chemicals
40	(+) Propanol Hydrochloride	2*100mg	"Sigma Make" Chemicals
41	(S) - (-) Propanol Hydrochloride	1*100mg	"Sigma Make" Chemicals
42	(1) Propanol Hydrochloride	2*5gm	"Sigma Make" Chemicals
43	Silver Paste for Conductive Pellco Colloidal	2*33.3	TED PELLIA INC, USA
44	High Purity Quartz Tube Transparent, UK (22X25mm)	30Meter	"ABLAZE" glassware

45	High Purity Quartz Tube Transparent, UK (9X11mm)	30Meter	"ABLAZE" glassware
46	(150mm) Vacuum Desicator with lid	10	"J Sil" Make Glassware
47	(210mm) Vacuum Desicator with lid	06	"J Sil" Make Glassware
48	(240mm) Vacuum Desicator with lid	06	"J Sil" Make Glassware
49	Acetone	2*2.5ltr	HPLC SRL
50	Ascorbic Acid	4*100gm	SRL
51	Calcium Carbonate	4*500gm	SRL
52	Chitosan	2*100gm	SRL
53	Chloroform	8*2.5ltr	SRL
54	Decyl Alchole	8*500ml	SRL
55	Dichloromehtane	3*2.5ltr	AR SRL
56	Diethyl Ether	4*2.5ltr	SRL
57	Ethyl Acetate	4*2.5ltr	AR SRL
58	Ethyl Oleate	8*500ml	SRL
59	Glycerol	4*2.5ltr	AR SRL
60	Isopropyl Myristate	4*2.5ltr	SRL
61	Methanol	20*2.5ltr	AR SRL
62	N-Hexane	4*2.5ltr	AR
63	Nitrobenzene	4*500ml	AR SRL
64	Pot Bromide	4*500gm	AR SRL
65	Pot Dihydrogen Ortho Phosphate	5*500gm	AR SRL
66	Potassium Hydroxide	6*500gm	SRL
67	Potassium Phosphate Dibasic	5*500gm	SRL
68	Sodium Hydroxide Pellets	6	AR SRL
69	Sodium Phosphate Dibasic	5	Local
70	Sodium Phosphate Mono	5	Local
71	Triethanolamine	4*2.5ltr	AR SRL
72	TLC Jar	5*10x5x6 cm	Local
73	TLC Jar	5*12x12x9 cm	Local
74	TLC Jar	5*15x9x6 cm	Local
75	Beaker Graduated	30*50ml	Local
76	Beaker Graduated	30*100ml	Local
77	Beaker Graduated	30*250ml	Local
78	Bottle Reagent	10*250ml	Local
79	Measuring Cylinder	30*10ml	Local
80	Measuring Cylinder	30*25ml	Local
81	Measuring Cylinder	30*50ml	Local
82	Volumetric Flask	20*2ml	Local
83	Volumetric Flask	10*5ml	Local

84	Volumetric Flask	30*10ml	Local
85	Volumetric Flask	20*25ml	Local
86	Volumetric Flask	20*50ml	Local
87	Volumetric Flask	20*100ml	Local
88	Volumetric Flask	20*200ml	Local
89	Volumetric Flask	20*250ml	Local
90	Volumetric Flask	20*500ml	Local
91	Volumetric Flask	20*1000ml	Local
92	Separating Funnel	30*125ml	Local
93	Separating Funnel	30*250ml	Local
94	Pipette Graduated	30*1ml	Local
95	Pipette Graduated	30*2ml	Local
96	Pipette Graduated	30*5ml	Local
97	Pipette Graduated	30*10ml	Local
98	Petridish Small	20*50x17mm	Local
99	Petridish Medium	20*80x17mm	Local
100	Petridish Large	20*100x17mm	Local
101	Test Tube Stoppard	100*15mm	Local
102	Funnel	1 box * 50mm	Local
103	Funnel	1 box * 62mm	Local
104	Funnel	1 box * 75mm	Local
105	Magnetic Rotor	10*9x25mm	Local
106	Magnetic Rotor	10*4x8mm	Local
107	Filter Paper	1 Rim*46x57cms	Local
108	Heating Mental	4*250ml	Local
109	Heating Mental	4*500ml	Local
110	Heating Mental	4*100ml	Local
111	Vernier Callipers	4	Local
112	Melting Point Capillary Tube	5	Local
113	Tissue Roll	10	Local
114	Pipette Bulb Small	10	Local
115	Pipette Bulb Medium	10	Local
116	Pipette Bulb Large	10	Local
117	Thermometer	20*0-110c	Local
118	Thermometer	20*0-360c	Local
119	Volumetric Flask with LDPE Stopper Class B Cap	25*10ml	"J Sil" Make Glassware
120	Conical Flask Cap	50*250ml	"J Sil" Make Glassware
121	Iodine Flask Cap	25*250ml	"J Sil" Make Glassware
122	Volumetric Pipette Class A Cap	25*25ml	"J Sil" Make Glassware

123	Quartz Tube	10mtr* (8x10mm)	Local
124	Quartz Tube	06mtr* (22x25mm)	Local
125	Quartz Tube	05mtr* (37x40mm)	Local
126	Wire Gauze with frame	5pkt * (6"x6")	"Vijay" miscelleus
127	Watch Glass	50*3"	"Vijay" miscelleus
128	Petri Dishes	20*15cm	"Vijay" miscelleus
129	Silica Crucible	20*25ml	"Vijay" miscelleus
130	Silica Lid	20*25ml	"Vijay" miscelleus
131	Heating Mental	1*2ltr	"Vijay" miscelleus
132	Whatman filter No.41	5pkt * 12.5cm	"Vijay" miscelleus
133	Stop Watch Digital	10	"Vijay" miscelleus
134	Methyl Red	5*25gm	SRL
135	Sodium Carbonate	5*500gm	SRL
136	Sodium Chloride	4*500gm	AR SRL
137	Toluene	5*500ml	AR SRL
138	Selenium Metal Powder	2*100gm	SRL
139	Potassium Iodide	5*500gm	SRL
140	Acetone	20*500ml	AR SRL
141	Sodium Hydroxide Pellets	5	AR SRL
142	Methanol	20*500ml	AR SRL

**Consumables: 1-April 2012 to 30-November 2012 (F. Y. 2012-13): Amount: Rs. 14, 32, 779.00**

Sr. No.	Name of the Chemical	Quantity	Make/Grade
143	Selenium Dioxide	1*100gm	SRL
144	3,4- Dimethoxy Acetophenone	2*50gm	Merck
145	Sodium azide	1*100gm	Merck
146	Triallyl Cynurate (2,4,6-triallyloty 1, 3, 5)	1*500gm	"Sigma Make" Chemicals
147	Polypropylene stycol	1*500gm	"Sigma Make" Chemicals
148	Polypropylene glycol	1*500gm	"Sigma Make" Chemicals
149	4,4 Dinonyl-2-2' dipyridyl	2*5gm	"Sigma Make" Chemicals
150	Cyanuric Chloride	1*250gm	"Sigma Make" Chemicals
151	Malononitrile	1*100gm	"Sigma Make" Chemicals
152	P-Toluenesulfonyl-methyl isocyanide	1*25gm	"Sigma Make" Chemicals
153	3, 4- Diaminotoluene 97%	1*100gm	"Sigma Make" Chemicals
154	2-Acylamido-2-methyl-1-propane sulfonic	1*250gm	"Sigma Make" Chemicals
155	Docusate sodium	1*100gm	"Sigma Make" Chemicals



156	4-Vinylpyridine	2*500gm	"Sigma Make" Chemicals
157	Stammous 2-ehtylhexanate	4*250gm	"Sigma Make" Chemicals
158	Potassium-tetra-chloroplatinate (II)	2*1gm	Sd's
159	Titanium (III) oxide	1*50gm	"Sigma-Aldrich" Acesor
160	Sodium trifloro-methane sulfonate	2*25gm	"Sigma-Aldrich" Acesor
161	Sodium tetrafluoro borate	2*500gm	"Sigma-Aldrich" Acesor
162	Bistrifluoro methane sulfonimide lithium	1*50gm	"Sigma-Aldrich" Acesor
163	Poly(ethylene-glycol) B-poly pyrolen	1*250ml	"Sigma-Aldrich" Acesor
164	Poly(ethylene-glycol) B-poly pyrolen	1*1ltr	"Sigma-Aldrich" Acesor
165	Epirubian Hydrochloride	1*5mg	"Sigma-Aldrich" Acesor
166	Polyvinyl pyrolidone Av.	1*1kg	"Sigma-Aldrich" Acesor
167	Poly (N-Iso propylaemide)	1*10gm	"Sigma-Aldrich" Acesor
168	Osmium tetroxide	2*1gm	Sd's
169	Irridium trichloride	2*1gm	Sd's
170	Thiophenol	1*250ml	Merck
171	Dicyclopertadiene	1*2.5ltr	Merck
172	Maleic anhydride	1*1kg	Merck
173	Styrene	1*2.5ltr	Merck
174	Methyl methacrylate	1*1tr	Merck
175	1-Vinyl-2-pyrolidone	1*250ml	Merck
176	Dially phthate	1*500ml	Merck
177	Methanol	1*2.5ltr	Merck
178	Ortho phosphoric acid GR	13*500ml	Merck
179	Copper Powder 100 Mesh 99.99%	2*100gm	"Alfa Aesar make" Chemicals
180	Tin (II) Chloride Puratronic 99.995%	2*100gm	"Alfa Aesar make" Chemicals
181	Tin Powder 99.999% Metal Basis	2*50gm	"Alfa Aesar make" Chemicals
182	Beakers Low Form Durasil	50*250ml	"Durasil"Glassware
183	Beakers Low Form Durasil	50*100ml	"Durasil"Glassware
184	Beakers Low Form Durasil	25*500ml	"Durasil"Glassware
185	Funnels Plain Long Stem Durasil	30*75mm	"Durasil"Glassware
186	Separating Funnels Teflon Glass Body	3*250ml	"Durasil"Glassware
187	Glass Rod Button Shape Flat End	200* (8x300mm)	"Durasil"Glassware
188	Chlorobenzene	10*500ml	Merck

189	Formaldehyde	10*500ml	Merck
190	Sodium Hexameta phosphate	3*500gm	Merck
191	Iodine	3*100gm	Merck
192	Silver Nitrate	2*25gm	Merck
193	1,4- dioxane	10*500ml	Merck
194	Methylene blue	5*125ml	Merck
195	Pot. Hydroxide	7*500gm	Merck
196	Hydrochloric Acid 0.1N	10*500ml	Merck
197	Pot. Carbonate	5*500gm	Merck
198	Sodium thiosulphate	2*500gm	Merck
199	pH indicator paper	5 pkt	Merck
200	Pot. Hydrogen difluoride	5*500gm	Merck
201	Recrystallised Alumina 99.7% Purity Cylindrical Trays	20*100ml	"Älumina Lab Ware"
202	Recrystallised Alumina 99.7% Purity Cylindrical Trays	20*250ml	"Äalumina Lab Ware"
203	Recrystallised Alumina 99.7% Purity Cylindrical Plates	10*(105x55x4)	"Äalumina Lab Ware"
204	Recrystallised Alumina 99.7% Purity Cylindrical Plates	10*(100x100x4)	"Äalumina Lab Ware"
205	Recrystallised Alumina 99.7% Purity Cylindrical Boats	40*(11x20x18)	"Äalumina Lab Ware"
206	Recrystallised Alumina 99.7% Purity Cylindrical Boats	40*(117x30x19)	"Äalumina Lab Ware"
207	Recrystallised Alumina 99.7% Purity Cylindrical Tubes	3*(72x57x1400)	"Äalumina Lab Ware"
208	Recrystallised Alumina 99.7% Purity Cylindrical Crucibles	40*(28x42)	"Äalumina Lab Ware"
209	Recrystallised Alumina 99.7% Purity Cylindrical Crucibles	40*(32x35)	"Äalumina Lab Ware"
210	Recrystallised Alumina 99.7% Purity Cylindrical Tubes	3*(72x57x1000)	"Äalumina Lab Ware"
211	Recrystallised Alumina 99.7% Purity Cylindrical Tubes	3*(51x40x1000)	"Äalumina Lab Ware"
212	Recrystallised Alumina 99.7% Purity Cylindrical Tubes: Beads	10*(5.5x2holex1000)	"Äalumina Lab Ware"
213	Recrystallised Alumina 99.7% Purity Cylindrical Tubes: Beads	10*(4.8x2holex1000)	"Äalumina Lab Ware"
214	Mineral Oil BT Grade	1*500ml	BIORAD
215	Ready Strip Ph3-10 7cm	3	BIORAD
216	PVDF Membrane	2*(26cmx3.3M roll)	BIORAD
217	Cystatin C	1*10UG	"Sigma Make" Chemicals
218	Antioigstatin	2*100UG	"Sigma Make" Chemicals
219	Tungestan 200A Boat for Thermal Evaporation	10	Local

220	Molybdeum 200A Boat for Thermal Evaporation	06	Local
221	Tellurium pieces 99.999% trace metal	1*100gm	Sigma
222	Selenium Oxide particle size <5mm, 99.999% trace metal basis	2*10gm	Sigma
223	Indium powder 99.999% trace metal basis	3*5gm	Sigma
224	Glucose oxidase (GOD) from Aspergillus niger (10)	1*50KU	Sigma
225	Creatininase from Pseudomobas sp. Lyophilized powder 100-300 Units/mg protein	2*1KU	Sigma
226	Urease, Jack Bean source, Urease from canavalia ensiformis (jack bean) powder 50000-100000 units/g solid	1*20KU	Sigma
227	Urease, Jack Bean source, Urease from canavalia ensiformis (jack bean) powder 15000-50000 units/g solid	1*100KU	Sigma
228	SPI supplies brand carbon paste	2*10gm	Sigma
229	SPI conductive silver paste plus	1*30gm	Sigma
230	Gallium 99.999% trace metal basis	2*10gm	Sigma
231	Indium pieces 99.99% trace metal basis	1*50gm	Sigma
232	Selenium pellets particle size <5mm, 99.999% trace metal basis	2*20gm	Sigma
233	Zinc Selenide powder, 10µm, 99.99% trace metal b.	1*50gm	Sigma
234	Creatininase from Pseudomonas sp. Recombinant expressed in E. coli, lyophilized powder	1*500UN	Sigma

**7 c. Details of Research Infrastructure developed out of PURSE Support:**

**1<sup>st</sup> April, 2011 to 30<sup>th</sup> November 2012 (F.Y. 2011-12 and F. Y. 2012-13):**

**Amount: Rs. 14,76,927.00**

Sr. No.	(A) Already Received Items	Make	Cost (INR)
1.	Air Conditioner (2 Nos.)	Blue Star	78,500.00
2.	Refrigerator 230 Litre (2 Nos.)	Samsung	33,000.00
3.	Fax Machine (1 Nos.)	Panasonic	5,995.00
4.	Renovation work for new Central Facility	-	5,02,060.00
5.	Electrification Work for New Central Facility	-	2,61,773.00
6.	1. Key Board For Fifty Keys (1 Nos.) 2. Notice Board 3 x 4 Feet (12 Nos.) 3. Notice Board 4 x 8 Feet (2 Nos.) 4. Round File With Three Tiers Set (1 Nos.)	All Ark All Ark All Ark	98,750.00
7.	1. Power Podium (1 Nos.) 2. Multimedia Projector Model In 114 With 15 Mitre Cable Kit With Ceiling Mount Kit	Mega Infocus	59,050.00

	For Projector		
8.	Interactive White Board With 82" Diagonal (1 Nos.)	AT	49,900.00
9.	Monthly Planner Aluminium Board 3 x 2 (1 Nos.)	-	3,500.00
(A) Total Rs.			10,92,528.00
	(B) Order Placed		
10.	Vacuum Cleaner	Eureka Forbes	6,300.00
11.	Semi Micro Balance	Merck	2,01,600.00
12.	Planner For Table	All Ark	1,950.00
13.	Basic Digital Copier Machine	Canon	1,23,576.00
14.	Revolving Chairs (12 Nos.)	Local Make	39,588.00
15.	Conference Table	Local Make	11,385.00
(B) Total Rs.			3,84,399.00
(A+B) Total Rs.			14,76,927.00

**7d. Details of Networking & Computational Facilities created out of PURSE Support:**

**1<sup>st</sup> April, 2011 to 30<sup>th</sup> November, 2012 for F.Y. 2011-12 and F. Y. 2012-13:**

**Amount: Rs. 10,08,699.00**

Sr. No.	(A) Details of the items procured for Computer Laboratory	Make	Date of Installation	Total Cost (INR) (Total Cost of the item/ Equipment after paying all charges)
1.	Desktop (D4) Computer System (2 Nos.)	Acer	29/11/2012	72,500.00
2.	i. Scanner (PS12_5) (1 No.) ii. Laptop (N3) (1 No.)	HP	30/11/2012	79,500.00
3.	i. Desktop (D2) (5 Nos.) ii. UPS (U17) (2 Nos.)	DELL	29/11/2012	2,76,780.00
4.	Laser Printer (PS7_8) Mono (1 No.)	HP	29/11/2012	30,750.00
5.	i. Laser Printer (Ps7_4) Mono (1 No.) ii. UPS (U1) (5 Nos.)	HP	29/11/2012	49,100.00
6.	Computer Chairs (15 Nos.)	Local	----	31,500.00
7.	Colour Printer LaserJet Pro MFP M175 (1 No.)	HP	30/11/2012	29,500.00
			(A) Total Rs.	5,69,630.00
	(B) Order Placed			
8.	Networking Components for Computer Laboratory	Elecon	-	1,07,390.00
9.	Computer Tables (15 Nos.)	Local	-	40,050.00
10.	Probook 4430s Note Book Computer (2 Nos.)	HP	-	79,485.00

11.	Desktop Computer System (1. No)	DELL	-	53,667.00
12.	Desktop Computer Systems (4 Nos.)	HP	-	1,33,770.00
13.	EPABX System (1 No.)	Matrix	-	24,707.00
			(B) Total Rs.	4,39,069.00
			(A+B) Total Rs.	10,08,699.00

### 8. Details of Utilization of PURSE Grant under 'Fixed Component'

#### 8a. Particulars of Manpower Employed: 1<sup>st</sup> April 2011 to 30<sup>th</sup> November 2012 (F. Y. 2011-12 and F. Y. 2012-13)

Sr. No.	Designation (Number of Persons)	Monthly Emoluments (INR)
(A) 1 <sup>st</sup> April 2011 to 31 <sup>st</sup> March 2012		
1.	Research Scientist-I (TWO)	35,640 .00
2.	Research Associate (ONE)	22,000.00
3.	Junior Research Fellow (ONE)	16,000.00
4.	Research Assistant (ONE)	10,000.00
(B) 1 <sup>st</sup> April 2012 to 30 <sup>th</sup> November 2012		
Sr. No.	Description (Number of Persons)	
1.	Research Scientist-1 (TWO)	35,640 .00
2.	Research Scientist II (ONE)	14,000.00
3.	Research Associate (THREE)	22,000.00
4.	Junior Research Fellow (ONE)	16,000.00
5.	Research Assistant ( EIGHT)	10,000.00

#### 8b. Details of Expenditure incurred under 'Travel':

Sr. No.	Particulars of Man trips	Total Cost (INR)
-	NIL	-

#### 8c. Any Seminar /Workshop Organized by the University during the period of Report, especially those involving the newly created facility under PURSE Initiative.

(A) 1 <sup>st</sup> April 2011 to 31 <sup>st</sup> March 2012; F. Y. 2011-12		
Sr. No.	Description of Seminar/ Workshop organized under PURSE program	Budget Allocated (INR)
1.	3 <sup>rd</sup> National Conference on Condensed Matter and Materials Physics (CMMP-2012) (By Department of Physics)	59,961.00
2.	"Health and Biological Science Emerging Entrepreneurial Opportunities" (By Department of Biosciences)	21,970.00

3.	Seminar On Advances Ceramics for Engineering and Biomedical Applications (By Department of Material Science)	17,850.00
	Total (A)	99,781.00
(B) 1 <sup>st</sup> April 2012 to 30 <sup>th</sup> November 2012; F. Y. 2012-13		
4.	National Workshop on Molecular Modeling for Drug Design (MMDD-2012) (Pay PURSE Central Facility)	1,22,189.00
	Total (B)	1,22,189.00
	Total (A)+ (B)	2,21,970.00

### Conferences and Seminars organized by the Sardar Patel University

Sr. No.	Theme	Sponsors	Duration
1.	National Workshop on Research methodology	Sardar Patel University	12 <sup>th</sup> to 14 <sup>th</sup> March 2012
2.	Sardar Patel University Research Scholars Meet	UGC and Sardar Patel University	8 <sup>th</sup> to 9 <sup>th</sup> January 2012

### Conferences and Seminars organized by Science departments

#### Department of Chemistry

3.	National Workshop on Frontiers in Chemistry, National Level	UGC	2 <sup>nd</sup> to 4 <sup>th</sup> February 2012
4.	State Level Programming Contest	Computer Society of India (CSI), V.V.Nagar Chapter	4 <sup>th</sup> February 2012.
5.	State Level IT Quiz Competition	Computer Society of India (CSI), V.V.Nagar Chapter	4 <sup>th</sup> February 2012.
6.	TCS Day-2012 as a part of placement activities	Department of Computer Science and TCS	8 <sup>th</sup> February 2012.
7.	Workshop on .NET Technology Trainer : Mr. Nauzad Kapadia, Mumbai	Computer Society of India (CSI), V.V.Nagar Chapter	21 <sup>st</sup> to 22 <sup>nd</sup> October 2011.
8.	Sakshat – A Workshop on “Education through ICT”	Microsoft India Pvt. Ltd.	25 <sup>th</sup> May 2011 to 4 <sup>th</sup> June 2011

#### Department of Home Science

9.	National Seminar: Functional Foods : Managing Health in the Modern Age”	UGC, (1) Unassigned Grant (2) SAP – DRS-I	7 <sup>th</sup> to 8 <sup>th</sup> October 2011
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### Department of Materials Science

10.	One day Workshop on Carbon Nanomaterials for Industrial applications	Indian Carbon Society (Gujarat Chapter) and	26 <sup>th</sup> August 2011
11.	Indo-French Workshop on High Performance Composites for Aeronautics & Space Applications & Extreme Environments	CEFIPRA and Laboratoire MATEIS, INSA de Lyon, France	30 <sup>th</sup> November to 2 <sup>nd</sup> December 2011
12.	One Day Brainstorming meeting for Development of Technology Systems on Ceramic Technologies	DST, New Delhi	24 <sup>th</sup> February 2012
13.	Workshop on Problem Solving	UGC-SAP-DRS(II)	20 <sup>th</sup> to 26 <sup>th</sup> December 2011
14.	One Day Seminar on Semiconductor Devices and Nano Materials	Physics Alumni Association, Automation systems and engineers pvt ltd for Agilent Technologies USA	7 <sup>th</sup> July 2011
15.	One day seminar on Nuclear Technologies for raising standard of living	DAE – BRNS and C C Patel Community Science Center, Physics Alumni Association	11 <sup>th</sup> September 2011

### 8d. Details of budget for Contingencies

(A) 1 <sup>st</sup> April 2011 to 31 <sup>st</sup> March 2012; F. Y. 2011-12		
Sr. No.	Description of Details (Item Wise)	Total Cost (INR)
1.	Hiring Services (Administrative Office Charges)	20,000.00
2.	Stationary	-
3.	Photocopy Charges	-
4.	Postal Charges, Miscellaneous & Sundry Expenses*	71,039.00
	Total (A)	91,039.00
(B) 1 <sup>st</sup> April 2012 to 30 <sup>th</sup> November 2012 F. Y. 2012-13		
Sr. No.	Description of Details (Item Wise)	Total Cost (INR)
1.	Hiring Services i. Clerk (One: on daily wages @ 180Rs. per day) ii. Peon (One: on daily wages @ 130Rs. per day)	54,550.00
2.	Stationary (including white ceramic boards)	31,135.00
3.	Photocopy Charges	712.00
4.	Postal Charges, Miscellaneous & Sundry Expenses*	56,611.00
	Total (B)	1,43,008.00
	Total (A+B)	2,34,047.00

Please see below for the details of expenses made:

**Period: 1<sup>st</sup> April 2011 to 31<sup>st</sup> March 2012 (F. Y. 2011-12): Amount: Rs. 91, 039.00**

Sr. No.	Description	Quantity	Cost (INR)
<b>Hiring Services (Administrative Office Charges)</b>			
1	Administration charge (10% of contingency of Rs. 200000/- for the PURSE Programme as per University rule)	-	20,000.00
<b>Postal Charges, Miscellaneous &amp; Sundry Expenses</b>			
2	Aditya Advertising Agency, Times of India Tender Notice for Sciences Equipment	48 Sq size	27,336.00
3	Chandresh Advertising, Gujarat Samachar, Tender Notice for sciences Equipment	12 pcs	19,026.00
4	Sundry and Miscellaneous Bills	----	21,177.00
5	Transport Charges	----	3,500.00

**Period: 1<sup>st</sup> April 2012 to 30<sup>th</sup> November 2012 (F. Y. 2012-13): Amount: Rs. 1, 43,008.00**

Sr. No.	Particulars	Quantity	Cost (INR)
<b>Hiring Services (Administrative Office Charges)</b>			
1.	Salary (07-04-2012 to 30-04-2012), Suresh A. Barot, Nilesh F. Rabari	02	5,320.00
2.	Salary (01-05-2012 to 31-05-2012), Suresh A. Barot, Nilesh F. Rabari	02	8,370.00
3.	Salary (01-06-2012 to 30-06-2012), Suresh A. Barot, Nilesh F. Rabari, Dinesh M. Harijan	03	11,440.00
4.	Salary (01-07-2012 to 31-07-2012), Suresh A. Barot, Nilesh F. Rabari	02	7,930.00
5.	Salary (01-08-2012 to 31-08-2012), Suresh A. Barot, Nilesh F. Rabari	02	7,310.00
6.	Salary (1-09-2012 to 30-09-2012), Suresh A. Barot, Nilesh F. Rabari	02	7,310.00
7.	Salary (1-10-2012 to 31-10-2012), Suresh A. Barot, Nilesh F. Rabari	02	6,870.00
<b>Stationary (including white ceramic boards)</b>			
8.	Color Push Pin Box, (Bansal Audio Visual Pvt. Ltd. Ahmedabad)	09	1,170.00
9.	Bilt Copy Power Xerox Paper, (Bansal Audio Visual Pvt. Ltd. Ahmedabad)	10Pkt	1,550.00
10.	Executive File Tray, (Tech Micro Solution Ahmedabad)	01	14,455.00
	Ceramic White Board Size 4x6 Feet, (Tech Micro Solution Ahmedabad)	01	
	Anak Modular Syatem Model AMDS 4L, (Tech Micro Solution Ahmedabad)	01	



	Versatile Pen Stand	01	
11.	Ceramic White Board Size 4x6 Feet, (Tech Micro Solution, Ahmedabad)	01	13,960.00
	Anak Modular Syatem Model AMDS 4L,	01	
	Executive File Tray	01	
12.	Xerox Charges	2045	712.00
13.	Postal Charges, Miscellaneous & Sundry Expenses		
	Sundry Bill, (Aligadh Lock And Gun Centre Anand)	04	1,785.00
	Sundry Bill, Posting Charge (Anand Post Office)	01	
	Sundry Bill, Copier Paper A4 Size (Chandan Stationary Vidyanagar)	05 Pkt	
	Sundry Bill, Courier Service (Maruti Courier V. V. Nagar)	01	
	Sundry Bill, Posting Charge (V. V. Nagar Post Office)	01	
	Sundry Bill, Lock (New Anand Lock Center V. V. Nagar)	03	
14.	Advertisement (Tender Notice)	2 to 5 Sq. cm.	5,040.00
15.	Sundry Bill (Rubber Stamps)	15	660.00
16.	Sundry Bill, Freight Charge paid for samples received from Industry	01	3,850.00
17.	8 GB Pendrive (Desktop Creators Anand)	01	1,289.00
	Rubber Stamp, (Gayatri Rubber Stamp V. V. Nagar)	-	
	Courier Charge, (Shree Maruti Courier V. V. Nagar)	01	
	Courier Charge, (Shree Maruti Courier V. V. Nagar)	01	
	Courier Charge , (Shree Maruti Courier V. V. Nagar)	01	
	Courier Charge, (Shree Maruti Courier V. V. Nagar)	01	
18.	Carpenter Work (Babubhai R. Panchal, Bakrol)	03	3,300.00
19.	Red Laser Pointer, (Bansal Audio Visual Pvt. Ltd. Ahmedabad)	01	16,100.00
	Colour Push PinBox, (Bansal Audio Visual Pvt. Ltd. Ahmedabad)	01	
	Digital Camera, (Bansal Audio Visual Pvt. Ltd. Ahmedabad)	01	
20.	Analytical Service UV/VIS/NIR Analysis	60	10,755.00
21.	Analytical Service TGA Analysis	06	2528.00
22.	Analytical Service CHN Analysis	06	1854.00
23.	HDD Baffalo 500GB external Hard disk, Source InfoTech, Anand	01	4,450.00
24.	Tata Docomo unlimited HARP Plan, Modem ZTE MF 631 USB SIM KIT- 39 Dongle	01	5,000.00
	3G DON RET HARP 5000 Dep Pack	01	

**8e. Particulars of funds utilized for 'Maintenance' Purpose:****Period: 1<sup>st</sup> April 2012 to 30<sup>th</sup> November 2012(F. Y. 2012-13): Amount: Rs. 2, 08,989.00**

Sr. No.	Details of Maintenance	Department	Cost (INR)
1.	Annual Maintenance Contract (AMC) of X-Ray Diffractometer given to I. R. Technology Services Pvt. Ltd. Navi Mumbai	Physics	1,40,450.00
2.	Annual Maintenance Contract (AMC) of KAPPA APEX II SC-XRD System given to Bruker AXS Analytical Instruments Pvt. Ltd. Mumbai	Physics	68,539.00
		Total	2,08,989.00

**9. Utilization of the facilities created under PURSE Program Support:**

The identification of research groups for the effective utilization of instruments in the central facility of PURSE program DST is in progress. However the research work in science is being supported under the program through appointment of research personnels, by providing chemicals, by making available the research infrastructure and by promotion of research on inters disciplinary topics. Please see items 7b, 7c, 8a, 8d and 15.

**10. Details of full length Research Publication (in Peer- Reviewed Journals) during the Period under report:****An Overview****[A] Articles/Papers published in Academic Journals**

Sr. No.	Department	Number
1.	Biosciences	63
2.	Chemistry	52
3.	Computer Science	54
4.	Electronics	03
5.	Materials Science	12
6.	Mathematics	10
7.	Physics	46
	Total	240

**[B]Books/Chapters in Book**

Sr. No.	Department	Books	Chapters in Book
1.	Biosciences	-	03
2.	Computer Science	-	01
3.	Mathematics	02	-
4.	Physics	02	-

For the details of publications please see Annexure- I (Page no. 22 to 39)

**11. Sponsored research projects in operation during the period under report (please provide names of PI/Co-PIs, title of the project, funding agency and total quantum of external support)**

**An Overview**

Sr. No.	Departments	Sponsored Research Projects (Ongoing / New)	Total Grant (Rs.)	Sponsoring Agency
1.	Biosciences	20	5,54,00,500.00	DST, DST-WOS-A, DBT, UGC, BASF, CSIR, MoES, GSBTM, Seed Grant (SPU)
2.	Chemistry	09	83,38,331.00	UGC, DAE, MoES, DST, Seed Grant (SPU)
3.	Computer Science	01	6,21,000.00	UGC
4.	Home Science	04	13,37,200.00	UGC, DBT, Seed Grant (SPU)
5.	Materials Science	09	2,76,66,000.00	UGC, DST, DST-RFBR(Indo-Russia), IPR, IPR-BRFST, DHEGoG
6.	Physics	07	80,70,750.00	UGC, DAE, BRNS, ISRO,
7.	Mathematics	02	2,00,000.00	Seed Grant (SPU)
8.	Pharmaceutical Sciences	03	3,00,000.00	Seed Grant (SPU)
	Total	55	10,19,33,781.00	

Please see Annexure-II for the details (Page no. 40 to 43)

**12. Utilization of Equipments by other institutes:** Nil at present

**13. Self assessment of the impact of the PURSE support:**

**13 a. Success of the students at national level tests (various PG/Ph.D. entrance tests and tests for JRF etc) during the April 2011 to March 2012.**

Sr. No.	Department	PG	Ph. D.	NET	GATE	SLET	Others*
1.	Chemistry		08	01	03	03	
2.	Electronics		-	01	00	00	
3.	Home Science		-	03	00	00	
4.	Materials Science		-	00	06	00	
5.	Physics		-	02	00	00	
6.	Mathematics		-	-			04
7.	Biosciences	10	33	02			
8.	Statistics		01				
9.	Computer Science	120	01				

\* Students selected in National Training Programmes such as MTTs (NBHM) and HRI, Allahabad

**13 b. Any other new innovation/research projects that emerged on the basis of PURSE support:**

**(A)** Immediately after the award of the PURSE-DST program, the university organized a couple of brain storming sessions, first involving the Heads of the science departments and the second involving the faculty members of the Science Faculty, to discuss and develop a scientific program in research and teaching pertaining the areas of inter-disciplinary studies and research. The university thus identified the following areas for the development of teaching and research programs:

1. Biomedical Science and Technology
2. Defense Science and Technology
3. Earth and Planetary System Sciences

To facilitate design and implementation of the above programs of inter-disciplinary studies, the university has established **CISST – Centre for Inter-disciplinary Studies in Science and Technology** and earmarked about **Rs. 50 lakhs from its own resource**. This center would thus supplement the PURSE – DST program.

**(B) CISST activities:**

- (i) From the resource made available by the university under this center, the following research projects in inter-disciplinary areas have been initiated to promote inter departmental research collaborations:

No.	Principal Investigator	Collaborator	Titles
1.	PC Vinodkumar SPU, Physics	BY Thakore SPU, Physics	Applications of Quantum Field Theory Methods in Financial Market Dynamics
		PK Priyan SPU, MBA	
2.	TR Shah SPU, Pharma. Science	Rita V Vora PS Medical College, Karamsad	Hydrogel Thickened Microemulsion of Methotrexate for the Treatment of Psoriasis: Formulation and Clinical Implications
3.	AVRL Narsimhacharya SPU, Biosciences	NV Sastry SPU, Chemistry	Exploratory Investigations for the Removal of Fluoride ions from Water using Organic Bio- waste
4.	PK Priyan SPU, MBA	RB Subramaniam SPU, Biosciences	Incubation Centre and Inter-departmental Collaborations: Mechanism for Making Research into Fruition
5.	HJ Panchal SPU Comp. Science	Brijal Patel SPU Comp. Science	Heli-PyD, a Comprehensive Database for Helicobacter Pylori
6.	KR Surati SPU, Chemistry	KD Patel SPU, Physics	Synthesis of Materials Based on Mixed Ligand Complexes and their Evaluation as Solid-state Electroluminescent Devices
7.	UH Patel SPU, Physics	SS Soni SPU, Chemistry	Synthesis and Single Crystal X-ray Characterization of Catalytically Active Ionic Liquids
8.	VS Vaishnav		Thin Film Semi-conductor Gas/Vapour Sensor
9.	SS Bhatt SPU, Biosciences	JM Patel SPU, Mathematics	An Investigation on Fractality in Some Biological Systems and Processes
		SJ Bhatt SPU, Mathematics	
10.	HV Dedania SPU, Mathematics	SJ Ghevariya SPU, Mathematics	An Investigation into Some Mathematical Aspects in Financial Derivatives

The work in the above projects is in progress.

- (ii) The process of design of curricula for the M. Sc Programmes in the identified areas is in progress. These programmes are being designed to be of inter-disciplinary nature with a strong component of research interwoven with teaching.
- (iii) **CISST Inter-disciplinary Lecture Series:** These are lectures planned on monthly basis and are being delivered by our faculty members with a view to identify a core group of researchers for taking up research work of inter-disciplinary nature. The details of these lectures is as follows:

Sr. No.	Name	Title	Month
1.	Prof. Dr. Harish Padh	India – Past, Present and Future	August 2012
2.	Prof. Dr. Vinodkumar	Higgs Boson – The God Particle	September 2012
3.	Prof. Dr. S. J. Bhatt	The Zero and The One	October 2012
4.	Prof. Dr. D. I. Brhambhatt	Nomenclature in Chemistry	November 2012

**(C) Central Laboratory Facility under PURSE Program**

The university has created a central laboratory facility to house the equipments, computer and network laboratory and other infrastructure facilities being procured under the PURSE-DST programme. A seminar Hall and an Office are also set up.

**13 c. Did newly created facility lead to betterment of quality of research publications?**

Yes certainly it would.

**13 d. Any patent filed by the University as a result of PURSE grant.**

No

**14. Is any problem faced in utilization of the grant/facilities?**

No

**15. A report highlighting the research activities of the University using facilities crated under PURSE Initiative during the period under review may also be provided:**

Please see **Annexure – III** for details (Page no. 44 to 49)

(Prof. Dr. N. V. Sastry)  
Nodal Officer, PURSE – DST Program

(Prof. Dr. Harish Padh)  
Vice Chancellor  
Coorodinator  
PURSE – DST Program

**[A] Papers published in Academic Journals during April 2011- March 2012 Basic Science**

**Departments:**

**Department of Biosciences**

1. Parmar A., Singh N. K., Kaushal A., Sonawala S. and Madamwar D, Purification, characterization and comparison of phycoerythrins from three different marine cyanobacterial cultures, *Bio resource Technology*, 102 (2), 1795-1802 (2011).
2. Dandavate V., Keharia H. and Madamwar D, Ester synthesis using *Candida rugosa* lipase immobilized on magnetic nanoparticles. , *Biocatalysis and Biotransformation*, 29 (2), 37-45, (2011).
3. Shah V., Jain K., Desai C. and Madamwar D., Metagenomics and integrative ‘-omics’ technologies in microbial bioremediation, *Metagenomics: Current Innovations and Future Trends*, Chapter 12, 211-240 (2012).
4. Acharya B. K., Pathak H., Mohana S., Shouche Y., Singh V. and Madamwar D, Kinetic modeling and microbial community assessment of anaerobic biphasic fixed film bioreactor treating distillery spent wash., *Water Research* , 45, 4248-4259 (2011).
5. Parmar A., Singh N. K., Kaushal A. and Madamwar D, Characterization of an intact phycoerythrin and its cleaved 14kDa functional subunit from marine cyanobacterium *Phormidium* sp. A27DM, *Process Biochemistry*, 46, 1793-1799 (2011).
6. Parmar A., Singh N. K., Pandey A., Gnansounou E. and Madamwar D., Cyanobacteria and microalgae: A positive prospect for biofuels, *Bioresource Technology*, 102, 10163-10172 (2011).
7. Chapla D., Patel H., Singh A., Madamwar D and Shah A, Production, purification and properties of a cellulose-free thermostable endoxylanase from newly isolated *Panibacillus* sp. ASCD2, *Annals of Microbiology*, 62, 825-834 (2012).
8. Patel V., Jain S and Madamwar D., Naphthalene degradation by bacterial consortium (DV-AL) developed from Alang-Sosiya ship breaking yard, Gujarat, India, *Bioresource Technology*, 107, 122-130 (2012).
9. Patel V., Cheturvedula S and Madamwar D., Phenanthrene degradation by *Pseudoxanthomonas* sp. DMVP2 isolated from hydrocarbon contaminated sediment of Amlakhadi canal, Gujarat, India., *Journal of Hazardous Materials*, 201-202, 43-51 (2012).
10. Jain K., Shah V., Chapla, D. and Madamwar D., Decolorization and degradation of azo dye-Reactive Violet 5R by an acclimatized indigenous bacterial mixed cultures-SB4 isolated from anthropogenic dye contaminated soil., 213-214, 378-386 (2012).
11. Narra M., Dixit G., Divecha J., Madamwar D. and Shah A., Production of cellulases by solid state fermentation with *Aspergillus terreus* and enzymatic hydrolysis of mild alkali-treated rice straw, *Bioresource Technology*, 121, 355-361 (2012).
12. S. Venkata Mohan, P. suresh Babu, K. Naresh, G. Velvizhi and Madamwar D., Acid azo dye remediation in anoxic-aerobic-anoxic microenvironment under period discontinuous batch operation: Bio- electro kinetics and microbial inventory, *Bioresource Technology*, 119, 362-372 (2012).

13. Chapla D., Patel H., Madamwar D and Shah A., Assessment of a Thermostable Xylanase from *Paenibacillus* sp. ASCD2 for Application in Prebleaching of Eucalyptus Kraft Pulp, *Waste Biomass Valorization*, 3, 269-274 (2012).
14. Karumanchi S. Rao, Jong Sik. Kim and Yoon Soo Kim, Early changes in the radial walls of storied fusiform cambial cells during fiber differentiation, *IAWA*, 32, 333-340 (2011).
15. K. S. Rajput and K. S. Rao., Development of vascular cambium in the petiole of *Terminalia catapa* L., (Combretaceae), *Phyton*, 51, 289-297 (2011).
16. Prashant, S., M. S. Sunitha. S., Pramod, Karumanchi S. Rao, S. K. Rawal, and P. B. Kavi Kishor, Down-regulation of *Leucaena leucocephala* cinnamoyl CoA reductase (LICCR) gene induces significant changes in phenotype, soluble phenolic pools and lignin in transgenic tobacco, *Plant Cell Reports*, 30, 2215-2231 (2011)
17. Sirisha V.L., D. Ranadheer Kumar, S. Prashant, Pramod Sivan. N. Jalaja. P.Maheshwari Rao, S. Nageswara Rao, Preeti Mishra,. S. Rao Karumanchi, B. M. Khan and P. B. Kavi Kishor, Cloning, characterization and impact of up- and down-regulating *Subabul cinnamyl alcohol dehydrogenase* (CAD) gene on plant growth and lignin profiles in transgenic tobacco, *Plant Growth Regulation*, 66, 239-253 (2012).
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19. Rupal A. Vasant, A. V. R. L. Narasimhacharya, Antihyperglycemic and antihyperlipemic effects of *Mangifera indica* L. in fluoride induced toxicity, *Pharmacologyonline*, 3, 265-274 (2011).
20. Rupal A. Vasant, A. V. R. L. Narasimhacharya, Alleviatory potential of *Emblca officinalis* G. as a food supplement in fluoride induced hyperlipemia and oxidative stress, *Journal of Pharmacy and Pharmaceutical Sciences*, 4 (1), 404- 408 (2011).
21. Rupal A. Vasant, A. V. R. L. Narasimhacharya, Amla as an antihyperglycemic and hepatorenal protective agent in fluoride induced toxicity, *Journal of Pharmacy and Bioallied Sciences*, 4 (3), 250-254 (2012).
22. Mohan N. Patel, Bhupesh S. Bhatt, Promise A. Dosi, A. V. R. L. Narasimhacharya, Hetal V. Movaliya, Synthesis, spectral investigation and biological interphase of drug-based cytotoxic square pyramidal coordination compounds. *Applied Organometallic Chemistry*, DOI: 10.1002/aoc.2841 (2012).
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25. Himanshu S Bariya, Vasudev R Thakkar, Amit N Thakkar and Subramanian R B, Induction of systemic resistance in different varieties of *Solanum tuberosum*, by pure and crude elicitor treatment., *Indian Journal of Experimental Biology*, 49, 151-162 (2011)
26. Yachana S Jha, R.B. Subramanian and Suchita Patel, Endophytic Bacteria Induced Enzymes against *M. grisea* in *O. sativa* under Biotic Stress, *African journal of basic and applied sciences*, 3(4), 136-146 (2011).



27. Suchita Patel, R B Subramanian and Yachana S Jha, A simple and rapid method for isolation of Alternaric acid from *Alternaria solani*, *Current trends in Biotechnology and Pharmacy*, 5 (2) (2011).
28. Pritesh Parmar and R B Subramanian, PCR based method for testing *Fusarium* wilt resistance of tomato, *African journal of basic and applied sciences*, 3(5), 219-222 (2011).
29. Yachana Jha, R.B. Subramanian and Suchita Patel, Combination of endophytic and rhizospheric plant growth promoting rhizobacteria in *Oryza sativa* shows higher accumulation of osmoprotectants against saline stress, *Acta physiologiae plantarum*, 33(3), 797-802 (2011).
30. Bhaumik Dave, Ankit sudhir, Mehul Pansuriya, Dharmesh Raykundaliya, R. B. Subramanian, Utilization of *Jatropha* deoiled seed cake for production of cellulases under solid state fermentation, *Bioprocess and Biosystems engineering*, 35, 1343-1353 (2012).
31. Ankit Sudhir, Bhaumik Dave, Kalkal Trivedi, R. B. Subramanian, Production and amplification of an L-asparaginase gene from actinomycetes isolate *Streptomyces* ABR2, *Annals of Microbiology* (2012).
32. Pritesh Parmar, Mandakini Patel, Bhaumik Dave, R.B. Subramanian and Hyeun-jong Bae, Isolation, cloning and expression of novel metallothioneine type II protein from *Colocassia esculentum*, *Universal journal of medicine and dentistry*, 1(3), 37-45 (2012).
33. Pritesh Parmar, Madhvi Gandhi, and R.B. Subramanian, Isolation and molecular characterization of avirulence gene from Indian isolates of *Fusarium oxysporum* f. sp. *Lycopersici*, *Journal of cell and tissue research*, 12(1), 3061-3067 (2012).
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## [B] Books/Chapters in Book

### Department of Bio-Sciences

1. S.M. Khasim, T.V. Ramana Rao, G. Ramesh and S. Hemalatha, Chapter: Structure and development of fruit and seed of *Jatropha gossypifolia* L. In *Jatropha challenges for a New Energy Crop*, Springer Science, New York, (2012).
2. Kalia K. and Patel HV, The diabetogenic effect of arsenic, Chapter in book "Environmental Pollution, Ecology and Human Health", (Ed. GP Reddy, SJS Flora, RM Basha) Narosa Publishing House, New Delhi
3. Shah V., Jain K., Desai C. and Madamwar D., Molecular analyses of microbial activities involved in bioremediation: Current scenario and future applications., *Microbes in Environmental Management and Biotechnology.*, Chapter 11, 221-248 (2012).

### Department of Computer Sciences

4. Dr. Priti Srinivas Sajja, Personalized Content Representation through Hybridization of Mobile Agent and Interface Agent in Susmit Bagchi (Ed.), *Ubiquitous Multimedia and*

*Mobile Agents: Models and Implementations*, Chapter 4, pp.85-112, IGI Global Book Publishing, Hershey, PA, USA, (August 2011).

#### **Department of Mathematics**

5. A.H. Hasmani (Co-author), Mathematics (Std. 11) Sem-I, Gujarat State School Textbook Board, Gandhinagar, (2011).
6. A.H. Hasmani (Co-author), Mathematics (Std. 11) Sem-II, Gujarat State School Textbook Board, Gandhinagar, (2012).

#### **Department of Physics**

7. Dr. N. K. Bhatt, Thermodynamic Properties of Some Metals at High Temperatures: Mean-Field Theory and Thermodynamics, LAP LAMBERT Academic Publishing ISBN-10: 3846518476 ISBN-13: 978-3846518472. (November 2011).
8. Dr. N. K. Bhatt et al., A Text Book of Physics Std. 12 (Sem: III and IV), Gujarat State School Text Book Board.



**Details of Sponsored Research Projects during April 2011- March 2012  
Science Departments**

**[A] List of Ongoing Projects**

**Department of Biosciences**

1. Dr. Datta Madamwar (PI), Metagenome analysis for metabolic pathways present in activated biomass at common effluent treatment plant (CETP), DBT, New Delhi, Rs. 61,32,000/- 3 Years (Jan 2010 to Dec 2013).
2. Dr. Datta Madamwar (PI), Molecular assessment of bacterial community structure of long term polluted sea coast near Alang ship breaking yard and exploitation of the bacterial wealth for PAH bioremediation, DBT, New Delhi, Rs. 26,95,000/-, 3 Years (Aug 2010 to Jul 2013).
3. Dr. R. B. Subramanian (PI), Dr. Datta Madamwar (CI), Dr. Hareshkumar Keharia (CI), Molecular and '-omics' technologies to gauge microbial communities and bioremediation of xenobiotic contaminated sites., DBT, New Delhi, Rs. 3,07,73,000/-, 5 Years (Oct 2010 to Sept 2015).
4. Dr. R. B. Subramanian (PI), Screening and Identification of a SSR marker linked to resistance against Fusarium wilt in tomato., UGC, New Delhi, 8,63,300/-, Three Years (01-02-2010) to (31-03-2011).
5. Dr Vasudev R. Thakker (PI), Characterization of natural resistance in Arachis hypogaeae L. against aspergillus niger, UGC, New Delhi, 7,62,800/- ,2010, 3 year.
6. Dr. T.V.Ramana Rao (PI), Histo-physiological analysis of melons at different rates of ripening., UGC, New Delhi, Rs. 7, 77, 800/- , 3 ½ Years (May, 2009 to October, 2012).
7. Dr. Mrs. Amita R. Shah (PI), Dr. Datta Madamwar (CI), Production of  $\beta$ -xylosidase and accessory hemicellulolytic enzymes for effective bioconversion of plant lignocelluloses., GSBTM Gandhinagar, Rs.19,60,800/-, Three Years.
8. Dr. M. Nataraj (PI), Micropropagation of Hyphaene dichotoma-a rare and endemic palm, UGC, New Delhi, Rs. 7, 04,300/- 2010, 3 Years.
9. Dr. J. S. S. Mohan (PI), Evaluation of Physiological Effects of Headline 20% WG in Zea mays L., Rs. 1,39,700.00 BASF India Pvt. Ltd., Mumbai, April 2011 –March 2012.
10. Dr. J. S. S. Mohan (PI), Evaluation of Physiological Effects of Headline 20% WG in Groundnut, Rs. 1,39,700.00, BASF India Pvt. Ltd., Mumbai, April 2011 –March 2012.
11. Dr. Kiran Kalia (PI), Potential of marine bacterial isolates in arsenic bioremediation, Ministry of Earth Sciences (MoES), 21.33 lacs, 2010-2013.
12. Dr. Datta Madamwar (PI) , One Time Grant under BSR Programme, UGC, New Delhi, Rs. 7,00,000/-
13. Dr. Vikas Bhardwaj, Characterization of RNA Binding proteins as drug targets for Leishmaniasis, Seed Grant, SPU, Rs.1,00,000/-, One year.

**Department of Chemistry**

14. Dr. H. S. Patel (PI), "Decolorization and removal of dyes from textile industries effluents", UGC, New Delhi, 8, 64,300/-, 2010, Three Years.
15. Dr. Jignesh H. Trivedi (PI), Studies in Potential Graft Copolymers of an industrially important marine Polysaccharide-Sodium salt of Partially Carboxymethylated Sodium

Alginate, Ministry of Earth Science, New Delhi, Rs. 10, 17,750/-, 2008-2011 (February, 2008 to August, 2011).

16. Dr. S. S. Soni (PI), "Development of high efficiency low cost dye sensitized Solar Cells", DST, New Delhi, Rs. 20, 43,581/- , 2009, 3 Years.
17. Dr. Kirankumar R. Surati, Synthesis and characterization of Zenith of Phosphorescent Indian (III) and (II) mixed Lizard Complexes for OLEDs. Application. Seed Grant, SPU, Rs.1,00,000/-, One year.

#### **Department of Computer Science**

18. Dr. Priti Srinivas Sajja (PI), Neuro-fuzzy decision support system for course selection, UGC, New Delhi, 6.21 lacs, 3 years [1st May 2009 to 30th April 2012].

#### **Department of Home Science**

19. Dr. V.H.Patel (PI), "Development of Database for total Phenolic Compounds and total Antioxidant Capacity of Indian Foods", UGC, New Delhi, 2010, Three years.
20. Dr. Jisha Elias (PI), Screening of SNPs in Melanocortin-4-Receptor gene in Over weight-Obese population of Anand- Vallabh Vidyanagar., Seed Grant, SPU, Rs.1,00,000/-, One year.
21. Ms. Viraj Roghelia (PI), Nutritional Composition and Pesticide residue level among organically and conventionally grown fruits and vegetables, Seed Grant, SPU, Rs.1,00,000/-, One year.

#### **Department of Materials Science**

22. Dr. L. M. Manocha (PI), Dr. S. Manocha (CI), Centre of Advanced Studies(CAS)-Special Assistantship Programme (SAP), UGC, New Delhi, 106 lakhs, 2009-2014.
23. Dr. L. M. Manocha (PI), Dr. S. Manocha(CI), Studies on Development & Characterization of Nanostructures Incorporated Carbon & Silicon Carbide based Composites, National Fusion Programme (IPR), Gandhinagar, Rs. 17.44 lakhs, 2010 -2012.
24. Dr. L. M. Manocha (PI), Development of Carbon-Ceramic composites for friction and wear application, DST, New Delhi, Rs. 32.80 lakhs, 2008-2011.
25. Dr. L. M. Manocha (PI), State Government Innovative program M.Sc (Nanoscience & Nanotechnology) & Special paper on ceramic Technology in M.Sc. (Materials Science), Directorate of Higher Education, Govt. of Gujarat under Innovative programme of State Government, Rs 63 Lakhs, 2009-11.
26. Dr. L. M. Manocha (PI), Studies on Enhancement of Thermal conductivity and Fracture toughness of Ceramic Matrix composites through in-corporation of Carbon nanotubes, DST-RFBR (Indo-Russia), Rs. 14.6 lakh, 2009-2012.
27. Dr. L. M. Manocha (PI), Studies on effect of Irradiation on Physical and Mechanical properties of Densified Carbon and SiC based Composites, IPR-BRFST Rs. 19.78 lakh, 20.09.2010, Two Years.

#### **Department of Physics**

28. Dr. U. H. Patel (PI), "X- ray Crystallographic investigations and ab initio calculations of O heterocyclic compounds ", UGC, New Delhi, Rs. 9, 27,300 /- Dates: 30/12/2008, 1st February, 2009 to 31st January, 2012.

29. Dr. M.P. Deshpande (PI), Dr. A.R. Jani (CI), "Raman Spectroscopy and Resistivity studies of semiconductors under pressure", DAE-BRNS, Amount Rs. 24,61,250/- with ATC, BRNS dated 06/01/2011., 2010-2013.
30. Dr. S.H. Chaki (PI), Dr. M.P. Deshpande (CI), "Synthesis and characterization of Tin monosulphide thin films, nanoparticles and single crystals for optoelectronic devices", DAE-BRNS, Amount Rs. 24, 49, 000/- with ATC, BRNS dated 13/12/2010, 2010-2013.

#### **Department of Pharmaceutical Science**

31. Dr. Vijaykumar K. Parmar, Standardization of herbal formulation using analytical techniques. Seed Grant, SPU, Rs.1,00,000/-, One year.
32. Dr. Tapan R. Shah, Efficacious and User Friendly Treatment of Topical Diseases Using Xolegel-A Novel Gel Based Delivery System Prepared Using Phytoconstituents. Seed Grant, SPU, Rs.1,00,000/-, One year.
33. Dr. Reecha A. Patel, Formulation and Evaluation of Pulsatile Capsule for Asthmatic Patients. Seed Grant, SPU, Rs.1,00,000/-, One year.

#### **[B] Projects awarded in 2011-2012**

##### **Department of Biosciences**

1. Dr. Kiran Kalia (PI), Mrs. Sejal Desai, Role of SNPs and its association with oral cancer in western Indian population, DST/WOS-A, New Delhi, 18.4 lacs, 2012-2015.
2. Dr. J. S. S. Mohan (PI), Induction of systemic acquired resistance to control blight and wilt in *Cuminum cyminum* L. by using *Alternaria burnsii* and *Fusarium oxysporum* f. sp. *cumini* derived elicitors, UGC, New Delhi, February 2011 – January 2014.
3. Dr U B Trivedi (PI), Microbial Synthesis and Purification of Chiral Hydroxyalkanoic acid, CSIR, 17, 41,300, February, 2011 to February, 2014.
4. Dr. Sujata Subhash Bhatt (PI), An investigation into the development of alternative carp feed using prebiotics, probiotics and fermentation., UGC, New Delhi, Rs. 6,69,800/-, Three years 2011 to 2014.
5. Dr. K. C. Patel (PI), Curdlan and Lipase production from *Cellulomonas flavigena* UNP3 and their application, UGC, New Delhi, Rs: 10, 56,800/- 4th July 2011 Three years.
6. Dr. K. C. Patel (PI), Dr. U. B. Trivedi (CI), Production and characterization of yellow antioxidant pigment from *Colletotrichum* sp. KCP1, DBT, New Delhi, Rs: 20,13,200/- 2nd June 2011, Three years.
7. Dr. R. B. Subramanian (PI), Effect of sequential applications of Headline 20% WG and Cabrio Top 60% WG on growth and physiology of *Gossypium hirsutum* (Cotton), BASF, 1, 98,000/-, One year (June, 2012 ) to (May 2013).

##### **Department of Chemistry**

8. Dr. S. S. Soni (PI), Influence of Micellar Morphology on Conductivity of Polymer Gel Electrolyte, UGC-DAE, Mumbai Centre, Mumbai, Rs. 5,73,000/-, Three years from 31st March, 2012.
9. Dr. N. J. Parmar (PI), Synthesis of bioactive polyheterocycles via Knoevenagel-hetero-Diels-Alder-reaction, UGC, New Delhi, 7,38,800/-, Three years (From: 1/02/2011 to 1/01/2014).
10. Dr. Jignesh H. Trivedi (CI), Photo-Induced Synthesis, Characterization and Potential Applications of Sodium salt of Partially Carboxymethylated Sodium Alginate, UGC, New Delhi, Rs. 11,22,500/-, 2011-2014.

11. Dr. M. N. Patel (PI), Evolution of Metal Based Drugs as SOD Mimics and Artificial Metallonucleases, UGC, New Delhi, 11,76,800/-, 2011, Three Years.
12. Dr. Manish P. Patel (PI), Studies of New Superabsorbent Nano Materials for Removal of Toxic metals and Dyes from Industrial Wastewater., UGC, New Delhi, 7.016 Lakhs, Feb-2011 to Jan-2014.

#### **Department of Home Science**

13. Dr. Rema Subhash (PI), Immobilisation of probiotic micro-organisms on food matrices and their efficacy in the preparation of fermented dairy products., DBT, New Delhi, Rs.11,37,200/-, 2/6/2011 to 31/7/2014.

#### **Department of Materials Science**

14. Dr. L. M. Manocha (PI), Development of silver based Polymeric matrix Nanocomposites, UGC, New Delhi, Rs. 8.58 lakhs, 2011-2014.
15. Dr. L.M .Manocha (PI), MOU for Scientific International Collaborations Collaboration with Shinshu University, Japan; Argon National laboratory, Chicago, USA; and Seoul National University of Science and Technology; Korea, UGC, New Delhi, Rs 2.5 lakh per year Up to 2014.
16. Dr. (Miss) R .H. Patel (PI), Studies on Flame Retardant Polymer Coatings based on Polyester Urethane - Epoxy Resin Systems, UGC, New Delhi, Rs. 6.96 lakhs, 2011-2014.

#### **Department of Mathematics**

17. Dr. A.H. Hasmani (PI), Applications of Newman-Penrose Formalism, Seed Grant, SPU, Rs.1,00,000/-, 2011, 1 Year.
18. Dr. P.A. Dabhi, Contribution to Harmonic analysis on groups and semigroups with weights, Seed Grant, SPU, Rs.1,00,000/-, One year.

#### **Department of Physics**

19. Dr. K. N. Joshipura (PI), A Project extended Electron scattering and atomic molecular processes in planetary and outer-space environments – theoretical study, ISRO - Bangalore, Extension granted for Additional Rs. 96,000/-, Extended for 06 months 1/04/2012 to 30/09/2012.
20. Dr. G.K.Solanki (PI), Studies on well characterized doped crystals of GeSe and SnSe for their applications in opto-electronic devices., UGC, New Delhi, Rs. 4,95,000/-, Three years 1st March-2011 to 28th February 2014.
21. Dr. Sunil Chaki (PI), Preparation and characterization of  $Cu_xS$  ( $x=1$  to 2) in nanocrystalline thin films, nanoparticles and single crystal forms for optoelectronic devices., UGC, New Delhi, 7,41,800/- , 2011, Three Years.
22. Dr. P. C. Vinodkumar (PI), Study of strong and weak decay processes of mesons involving heavy flavor quarks, UGC, New Delhi, Rs. 9,00,400/-, 3yrs [1/7/11 to 31/06/14

## Research Activities of the University under PURSE – DST Programme during the period of Report

### 1. Thrust Areas of Research in the Science Departments

Department	Thrust Areas of Research
Department of Biosciences	Microbial and Environmental Biotechnology, Plant and Animal Biotechnology and Plant and Microbial Biodiversity
Department of Chemistry	Polymer Science, Organic and Inorganic Chemistry, and Physical Chemistry
Department of Computer Science	Systems Software, Distributed Computing, Knowledge-based Systems, Image Processing
Department of Electronics	Semi-conducting Thin Films and Device Applications, Gas Sensors, Biosensors, Polymer Electronics, VLSI, Embedded Systems
Department of Home Science	Functional foods and Nutraceuticals, Nutrigenomics, Bio-processing, Natural dyes and textiles, Women Empowerment
Department of Materials Science	High Performance Composites, Ceramics, Carbon, Nano Materials and Smart Materials, Biomaterials and Polymers
Department of Mathematics	Banach Algebras, Operator Theory, Operator Algebras and Applications, Harmonic Analysis, Relativity, Tribology, Financial Mathematics
Department of Physics	Condensed Matter Physics, High Energy Physics, Atomic and Molecular Physics, Theoretical Physics
Department of Statistics	Design of Experiments, Inference, Biostatistics, Financial Statistics, Reliability and Life Testing, Statistical Quality Control

### 2. Academic Achievements of Various Departments

#### Department of Biosciences

The department is covered under UGC – SAP and DST-FIST programs. The faculty members of the department pursued following research aspects during the period of the report.

- Metagenomics and integrative omics technologies in microbial remediation.
- Purification and Characterization of cyanobacterial pigments.
- Microbial cellulases and xylanases and their applications.
- Synthesis of esters employing microbial lipases under non-aqueous media.
- Regulation of lignification during wood development.
- Single nucleotide polymorphism associated with insulin resistance, type 2 diabetes and diabetic nephropathy.
- Arsenic induced toxicity and its remedy.
- Alleviation of fluoride induced toxicity using plant materials.

- Production, characterization and applications of Microbial biopolymers.
- Antibacterial activity of certain underutilized fruits.
- Development of post-harvest technologies for improving shelf life of fruits.
- Screening of phytochemicals for their bioactive metabolites and their characterization.
- Ecology of life supporting plants in little Rann of Kutch, Gujarat.
- Search for novel L-asparaginases for use as therapeutic agents in treatment of leukemia.
- Use of microbial endophytes and plant growth promoting bacteria for developing resistance against biotic and abiotic stress in *Oryza sativa*.
- Microbial remediation of heavy metals.
  - Induced systemic resistance: strategies for control of microbial diseases in plants.
- Protein expression during infection of tiger prawn (*Penaeus monodon*) by white spot syndrome virus.

### Department of Chemistry

It is covered under UGC – CAS and DST – FIST programs.

Following research aspects are being pursued during the period of report.

- Microwave assisted synthesis of various heterocyclic compounds for their pharmaceutical applications like Benzimidazole, Pyranochromone. The work has been highlighted in journals like medicinal chemistry research, heterocyclic chemistry, European Journal of Medicinal Chemistry.
- Super adsorbed hydro gels developed for treatment of metal based industrial effluents.
- Antibacterial, nuclease and SOD mimic activity of metal complexes containing antibiotic drugs and various newly bidentate ligands.
- Studies on novel co-ordination polymers.
- Studies on surfactants.
- Studies on ionic liquids for organic synthesis.
- Studies on nanoaggregates in mixed micellar systems of amphiphilic copolymer and conventional ionic or nonionic surfactants – a search for synergistic behaviour and their utility as drug solubilizing and release systems based on hydrogels.

### Department of Computer Science

Research undertaken by Department of Computer Science during 2011-12

- *In silico* investigation and structural characterization of virulent factor *Helicobacter.pylori* strain J99.
  - *Helicobacter pylori* (*H. pylori*) are a Gram-negative microaerophilic, spiral bacterium that specifically colonizes the gastric mucosa, and it is the most common bacterial infection worldwide.

- Studied various virulent factors and suggested the treatments for controlling the gastric cancer.
- Neuro-fuzzy decision support system for course selection
  - The project aims to develop a neuro-fuzzy system which hybridizes two soft computing technologies namely fuzzy logic and artificial neural network for the course selection activity.
  - The neural network considers users' data, market trends, and courses available and learns broad category of students' aptitude.
  - The fuzzy logic facilitates human like interface between neural network and users. Such hybridization also aids user friendliness, self learning, and offers intelligent decision support and documentation.
- In areas such as artificial intelligence, communication networks, image processing, software engineering, and systems software several projects are ongoing under guidance of the faculty members of the department.

### **Department of Home Science**

- To screen for SNPs in Melanocortin-4-Receptor (Mc4r) Gene in Overweight-Obese Population of Anand-Vallabh Vidhyanagar.
- To monitor the effect of Kokam based fruit juice on the antioxidant status of 30 individuals of the college going age groups.
- To monitor the effect of antioxidants on gene expression in yeast model.
- Research activities under community research focused on studying the prevalence rates for metabolic diseases like Diabetes and Cardiovascular diseases. Other areas focused on studying the prevalence rates for osteoporosis and anaemia. 1200 people were randomly selected for the study. Blood analyses have been completed for 1200 participants. Statistical evaluation will be carried out shortly.
- Apart from these other areas of research includes food product development *i.e* designing functional food products with omega 3 fatty acid and high fibre content like flaxseed oil and amla meal fortified biscuits. Developing traditional Indian fermented foods such as idlis, handwa and dhola incorporated with probiotic organisms. Products like shrikand and stirred yogurt were also prepared with probiotic organisms. All these products were evaluated for their sensory, nutritional and storage properties.

### **Department of Materials Science**

It is covered under UGC Centre for Advanced Studies (CAS-II) and DST -FIST level II

The research in progress during the year covers the following.

- Meso-porous hydroxyapatite nanoparticles (20-40 nm) with high surface area were synthesized
- Development of silver based polymeric matrix nanocomposite
- Synthesis of nanosilver reinforced hydroxyapatite
- Material aspects of graphene
- Flame retardant polymers
- Nanostructures Incorporated Carbon & Silicon Carbide based Composites

- Thermal conductivity and Fracture toughness of Ceramic Matrix composites through in-corporation of Carbon nanotubes
- Effect of Irradiation on Physical and Mechanical properties of Densified Carbon and SiC based Composites.

### Department of Mathematics

It is covered under UGC-SAP-DRS Programme and NBHM Regional Library Program of DAE. The research in progress pertains to the following.

- Harmonic Analysis on groups and semi groups with weights with a particular emphasis on Buerling Algebras and weighted measured algebras
- Banach Algebras studies pertaining to unification, uniqueness of uniform norms and  $C^*$  norms, Arens regularity and amenability
- Operator Algebra, Operator Theory: Investigation of smooth sub algebras of  $C^*$  algebras and second order differential structures defined by close symmetric operator
- Differential Equations: Transformation methods  $r$ -parameter groups with application to two dimensional thermal boundary layers for second order fluids
- Inter-disciplinary Studies:
  - a. Financial Mathematics – Centered around Black – Sholes – Marton Theory
  - b. Theories of Gravitation – Tetrad formulism and geometric methods
  - c. Fractal Dimensions in Biosciences

### Department of Physics

It is UGC-SAP department. The ongoing work involves the following.

Condensed Matter Physics: Theory

- Using spin-polarized relativistic Korringa- Kohn-Rostoker and density functional schemes, the computation of Compton profiles and energy bands of transition metals as well as the computation of structural and related properties of simple and non-simple liquid metals by PYHS and OCP methods are endeavored. The calculations of phonons modes in non crystalline lithium, sodium, Lanthanides etc. Have been carried out. The study of thermoionic Rbcs liquid binary alloys are carried out. Elastic properties calculations and study on  $Ga_xIn_{1-x}P$ ,  $Ga_xIn_{1-x}As$ , etc. semiconductors and collective modes along with elastic constants of  $Cu_{50}Zr_{50}$ , etc. glasses are also carried out.

Condensed Matter Physics: Experimental

- Many new materials viz. off stoichiometric transition metal dichalcogenides, mixed transition metal dichalcogenides, metal chalcogenides, and semiconductor compounds of group II-VI, V-VI, I-VI, ternary compounds, biomolecules, low dimensional conductors, etc. have been synthesized in single crystals, thin films and nanoparticles forms and they have been studied.



- Synthesis of semiconductor materials like PbS, ZnSe, CdS, CuS, SnS, SnS<sub>2</sub>, Mn doped ZnO, etc. by simple chemical method, hydrothermal, microwave, ultrasonication, etc. and they are studied for structural, optical, thermal, topographical properties.
- Quantum Chemical studies on Crystal structure of Sulfacetamide and Sulfasalazine as well as docking studies of pyrrole derivatives using Hex is carried out.
- Design and fabrication of experimental setup for measurement of sample properties depending on the sample size, shape and requirements have been developed.
- High temperature thermoelectric power measurement.

#### Other Areas

- Theoretical investigations on total and ionization cross sections of N<sub>2</sub> and CO by positron impact are being carried out.

### **Department of Statistics**

The following research activities have been done in various areas of specialization during the year 2011-12

#### Statistical Inference:

One of the important problems in statistical inference is to estimate the parameters of the selected population or functions related to selected subsets, in this direction the Dept. obtained risk-unbiased estimation of selected subset Poisson population.

#### Design of Experiments:

Method of construction of G-efficient mixture designs for four types of mixture experiments, linear mixture designs, quadratic mixture designs, linearity constrained component designs and categorized mixture designs have been given. Further, New analysis of Cross Over designs suitable for randomized controlled trials has been obtained. Three fourth quarters fractional factorial designs versus saturated designs have been studied for the design and estimability properties, Response surface methodology was applied to optimize the packaging and enzyme production industrial applications.

#### Inference in Sample Surveys:

Recently, focus is on estimation of complex functions of a finite population. In bivariate and multivariate analyses the important descriptive measures are correlation and regression coefficients. Estimation of these parameters is an important inferential aspect, when the aim is to carry out factor analysis or a principle component analysis, of the finite population. Various estimators have been suggested for these parameters. A well-known estimator for the population mean or total is the generalized regression (GREG) estimator.

### 3. University Scheme for seed grants for research initiation.

**From its own resources**, the University has also developed a scheme for promotion of research for beginners by providing seed grants for the research projects with a view that the subsequent second step would be competing from grants from national agency for major projects.

Sr. No	Name of the Faculty	Department	Subject
1	Dr. Kirankumar R. Surati Assistant Professor	Chemistry	Synthesis and characterization of Zenith of Phosphorescent Indian(III) and (II) mixed Lizard Complexes for OLEDs. Application
2	Dr. Jisha Elias Ass. Professor	Home science	Screening of SNPS in Melanocortin-4 Receptor (mcr) Gene in overweight obese Population of Anand-Vallabh Vidyanagar
3	Ms. Viraj N. Rohgelia Assistant Professor	Home science	Nutritional composition and Pesticide Residue Level among Organically and Conventionally Grown Fruits and Vegetables.
4	Dr. Vijaykumar K. Parmar Assistant Professor	Pharmaceutical Sciences	Standardization of herbal formulation using analytical techniques
5	Dr. Tapan R. Shah Assistant Professor	Pharmaceutical Sciences	Efficacious And User Friendly Treatment of Topical Diseases Using Xolegel-A Novel Gel Based Delivery System Prepared Using Phytoconstituents
6	Dr. Reecha A. Patel Assistant Professor	Pharmaceutical Sciences	Formulation and Evaluation of Pulsatile Capsule For Asthmatic Patients
7	Dr. Vikas Bhardwaj Assistant Professor	Bioscience	Characterization of RNA Binding proteins as drug targets for Leishmaniasis
8	Dr. P.A. Dabhi Assistant Professor	Mathematics	Contribution to Harmonic analysis on groups and semigroups with weights