

F. No. 42-390/2013 (SR)

The Under Secretary (FD-III)
University Grants Commission
New Delhi-110002

25 June 2013

Sub:- UGC support for the Major Research Project in Physical Sciences, Bio-Sciences, Maths, Medical, Agricultural Sciences and Engineering & Chemistry to University/College Teachers - Project entitled, "Recognition and selectivity of molecules and ions using some heterocycle based fluorescent probes: Photophysical and electrochemical exploration"

Ref:- I am to refer to your letter forwarding the application of Dr. Tandrimsa Chaudhuri of your institution for financial assistance under the above scheme and to convey the Commission's approval & sanction an on account grant of Rs. 6,14,800/- (Rupees: six lakh fourteen thousand eight hundred only) to the Principal, Dr. Bhupendra Nath Dutta Smriti Mahavidyalaya, Burdwan-71347, WB in r/o Major Research Project of Dr. Tandrimsa Chaudhuri, Department of Chemistry for the period of 3 years w.e.f. 1.4.2013 as detailed below:-

S.No	ITEMS	AMOUNT APPROVED	GRANT RELEASED AS 1st INSTALMENT	Category
A.	Non - Recurring		2,10,000/-	GEN
1.	Books & Journals	10,000/-		
2.	Equipment (sonicator, balance)	2,00,000/-		
B.	Recurring		4,04,800/-	
1.	Honorarium to Retd. Teacher @ Rs. 12,000/- p.m.	nil		
2.	Project fellow @14,000/- p.m. for initial 2 years and Rs. 10,000/- p.m. from the third year onwards.	5,28,000/-		
3.	Chemical/ Glassware / Consumable	1,00,000/-		
4.	Hiring Services	nil		
5.	Contingency	30,000/-		
6.	Travel/Field Work	20,000/-		
7.	Special Need	nil		
8.	Overhead Charges @ Rs. 10% approved recurring Grant (Except Travel & Field Work)	65,800/-		
	Total (A + B)	9,53,800/-	6,14,800/-	

The acceptance Certificate in prescribed format (Annexure-I) available on the UGC web-site may be sent to the undersigned within one month from the issue of the award letter failing which the project may be treated as cancelled.

If the terms & conditions are acceptable, as per guideline which are available on UGC web-site www.ugc.ac.in the Demand Draft/ Cheque being sent may be retained. Otherwise the same may be returned in original to the UGC by Registered Post in variability with in 15 days from the receipt of the Demand Draft/Cheque in favour of Secretary, UGC, New Delhi.

Principal investigators should ensure that the statement of expenditure & utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the University Grants Commission in time.

The first instalment of the grant shall comprise of 100% of the Non -Recurring including Over Head Charges, and 50% of the total Recurring grant.

(Signature)



UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

GEN

FD Diary No. 5061

Dated : 27.06.2016

17 NOV 2016
October 2016

F.No.42-390/2013 (SR)

The Under Secretary (FD-III)
University Grants Commission
Bahadur Shah Zafar Marg
New Delhi - 110002

Sub: Release of Grant-in aid to Dr. Bhupendra Nath Dutta Smriti Mahavidyalaya, P.O. Hatgobindpur, Burdwan- 713407 West Bengal for the year 2016-17 under plan in respect of Major Research Project entitled "Recognition.....exploration" awarded to Dr. Tandrima Chaudhuri, Department of Chemistry, tenure of project from 01.04.2013 to 31.03.2017.

Sir,

I am directed to convey the sanction of the University Grants Commission for payment of grant of Rs. 1,99,200/- (Rupees One lakh ninety nine thousand two hundred only) as 2nd installment for the year 2016-17 towards Major Research Project to The Principal, Dr. Bhupendra Nath Dutta Smriti Mahavidyalaya, P.O. Hatgobindpur, Burdwan- 713407 West Bengal for the plan expenditure to be incurred during 2016-17.

I am also directed to say that the tenure of the above project has been extended by the UGC upto 31.03.2017 without any additional financial assistance for the extended period.

Name of the Item	Amount Allocated	Head of Account	Grant now Being Sanctioned	Grant already Released	Total Grant
Books & Journal	10,000/-	3.A(56).35	.....	10,000/-	10,000/-
Equipment	2,00,000/-		.....	2,00,000/-	2,00,000/-
Honorarium	.....	3.A(56).31	.....	.....	.....
Project fellow	4,48,000/-		1,39,200/-	2,64,000/-	4,03,200/-
HRA	.....		.....	.....	.....
Chemicals	1,00,000/-		40,000/-	50,000/-	90,000/-
Contingency	30,000/-		12,000/-	15,000/-	27,000/-
Hiring Services	.....		.....	.....	.....
Travel/field work	20,000/-		8,000/-	10,000/-	18,000/-
Overhead Charges	65,800/-		.....	65,800/-	65,800/-
Additional Grant	.....		.....	.....	.....
Total	8,73,800/-			1,99,200/-	6,14,800/-	8,14,000/-

- The sanctioned amount is debit able to Major Research Project head Sector 3.A(56).31 and is valid for payment during the financial year 2016-17 only.



Dr. Bhupendra Nath Dutta Smriti Mahavidyalaya
(Affiliated to Burdwan University)
Hatgobindapur, Burdwan-713407, W. B., INDIA

Dr. T. Chaudhuri
Assistant Professor

Department of Chemistry

Email: tanchem_bu@yahoo.co.in

Tel: 91-342-2584401 (Office)

Cell: +919932755527,

Fax: +91-342-2584616.

To
Date: 31.03.2017
The Under Secretary (FD-III)
University Grant Commission
New Delhi – 110002.

Subject: Submission of **Final report** along with **Utilization of the received fund in the 2nd installment.**

Dear Sir/Madam,

I am submitting the final report along with **audited utilization of the received fund of Rs. 1,99,200/- along with that receivable fund of Rs. 43,333/- in the 2nd installment** according to the UGC File no. **F. No-42-390/2043 (SR) dated 25th March 2013** FD Dairy No. 5061 dated 27.06.2016 of the Major Research Project grant.

This is to inform you that I am submitting herewith a filled in **Mandate Form** along with a **claim of receivable amount of Rs. 43,333/-** that had already been utilized for the last phase of this major project.

If you please do the needful to release this money as early as possible I shall be thankful to hand over the due fellowship to the research fellow worked in this project under my guidance.

Thanking you.

Tandrima Chaudhuri

Tandrima Chaudhuri

UGC Allotment and Expenditure

Item	Amount Allocated Rs.	1 st Installment released & utilized		Rescheduled allotment on 17.11.16	2 nd Installment			
		1 st Installment Rs.	Expenditure Incurred upto mid term Rs.		1 st phase (Rs.)	2 nd Installment Rs.	Expenditure 2 nd phase Rs.	Amount receivable Rs.
Books & Journals	10,000/-	10,000/-	10,000/-	10,000/-	-	-	-	-
Equipment	2,00,000/-	2,00,000/-	2,00,000/-	2,00,000/-	-	-	-	-
Project Fellow	4,48,000/-		2,09,533/- (Sept'13 to Nov'14, @ Rs 14,000 per month)	2,64,000/-	1,39,200/-	1,93,667/- [(Dec'14, to Aug'15 @ Rs. 14000/-) + (Sept'15 to Dec'15 @ 16000/-) + (Jan'16 3,667/-)]	28,333/- (Jan'16 and Feb'16 @ 16000/-)	
Contingency	30,000/-		14,569/-	15,000/-	12,000/-	15,431/-	3,000/-	
Field Work/Travel	20,000/-	3,39,000/-	13,605/-	10,000/-	8,000/-	6,400/-	2,000/-	
Hiring Services	Nil		-	-	-	-	-	
Chemicals & Glassware	1,00,000/-		59,373/-	50,000/-	40,000/-	40,627/-	10,000/-	
Overhead	65,800/-	65,800/-	65,720/-	65,800/-	-	-	-	
Balance in hand (Please specify)			42,000/-			-14,925/-		
Total	8,73,800/-	6,14,800/-	6,14,800/-	6,14,800/-	1,99,200/-	2,56,125/-	43,333/-	





ज्ञान-विज्ञान विमुक्तये

Annexure - IV

UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI – 110 002.

Utilization certificate

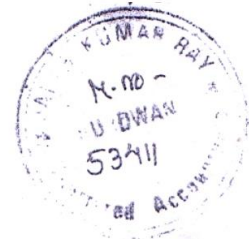
Certified that the grant of Rs. 8,73,800/- (Rupees Eight lakh seventy three thousand eight hundred only) allocated by the University Grants Commission under the scheme of support for Major Research Project entitled "Recognition and selectivity of molecules and ions using some heterocycle based fluorescent probes: Photophysical and electrochemical exploration." vide UGC letter No. F. 42 – 390 / 2013 (SR) dated 25/03/2013; and received Rs. 1,99,200/- (One lakh nintynine thousand two hundred only) as 2nd installment [**FD Diary No. 5061 dated 27.06.2016**] from the University Grants Commission has been fully utilized for the purpose for which it was sanctioned and receivable amount of Rs. 43,333/- (Rupees Forty three thousand three hundred thirty three only) that has already been utilized for the purpose for which it was proposed to sanction in accordance with the terms and conditions laid down by the University Grants Commission.


SIGNATURE OF THE
PRINCIPAL INVESTIGATOR

Dr. Tandrima Chaudhuri
Principal Investigator
UGC, Major Research Project
F. No-42-390 / 2013 (SR)


REGISTRAR/PRINCIPAL STAUTORY AUDITOR

Teacher-in-Charge
Dr. Bhupendra Nath Dutta
Smriti Mahavidyalaya
Hatgobindapur, Burdwan.





ज्ञान-विज्ञान विमुक्तये

Annexure - V

**UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI – 110 002.**

**STATEMENT OF EXPENDITURE IN RESPECT OF MAJOR/MINOR
RESEARCH PROJECT**

1. Name of Principal Investigator : **Ms. Tandrima Chaudhuri**
2. Deptt. of University/College : **Department of Chemistry, Dr. B.N. Dutta Smriti Mahavidyalaya**
3. UGC approval No. and Date: **F.No. 42 – 390/2013(SR) dated 25/03/2013**
4. Title of the Research Project: **“Recognition and selectivity of molecules and ions using some heterocycle based fluorescent probes: Photophysical and electrochemical exploration.”**
5. Effective date of starting the project : **01/04/2013**
6. (a) Period of Expenditure: From **01/09/2013** to **31.03.2016**
- h. Details of Expenditure _____

Item	Amount Allocated Rs.	1 st Installment released & utilized		2 nd Installment		
		1 st Installment Rs.	Expenditure Incurred upto mid term Rs.	2 nd Installment Rs.	Expenditure 2 nd phase Rs.	Amount receivable Rs.
Books & Journals	10,000/-	10000/-	10,000/-	-	-	-
Equipment	2,00,000/-	2,00,000/-	2,00,000/-	-	-	-
Project Fellow	4,48,000/-	3,39,000/-	2,09,533/- (Sept'13 to Nov'14, @ Rs 14,000 per month)	1,39,200/-	1,93,667/- [[Dec'14, to Aug'15 @ Rs. 14000/-) + (Sept'15 to Dec'15 @ 16000/-) + (Jan'16 3,667/-)]	28,333/- (Jan'16 and Feb'16 @ 16000/-)
Contingency	30,000/-		14,569/-	12,000/-	15,431/-	3,000/-

Field Work/Travel	20,000/-		13,605/-	8,000/-	6,400/-	2,000/-
Hiring Services	Nil		-		-	-
Chemicals & Glassware	1,00,000/-		59,373/-	40,000/-	40,627	10,000/-
Overhead	65,800/-	65800/-	65,720/-	-	-	-
Balance in hand (Please specify)			42,000/-	-	-15,000/-	
Total	8,73,800/-	6,14,800/-	6,14,800/-	1,99,200/-	2,56,125/-	43,333/-

i. Staff

Date of Appointment: 01.09.2013

S. No	Expenditure Incurred	From to	Amount Approved (Rs.)	1 st Installment Rs.	2 nd Installment Rs.	Expenditure Incurred(Rs.)	Amount required to disburse as fellowship Rs.
	Honorarium to PI (Retired Teachers) Rs.10,000/- p.m.	nil					Nil
	Project Associate Fellowship @ Rs. 8,000/- p.m.						
	Project Fellow @ Rs.14000/- p.m.	Sept'13 to Aug'15	3,36,000/-	2,64,000/-	72,000/-	3,36,000/-	Nil
	@ Rs. 16000/- pm	Sept'15 to Feb'16	96,000/-	-	67,200/-	67,200/-	28,800/-

1. It is certified that the appointment(s) have been made in accordance with the terms and conditions laid down by the Commission.
2. It as a result of check or audit objective, some irregularly is noticed, later date, action will be taken to refund, adjust or regularize the objected amounts.
3. Payment @ revised rates shall be made with arrears on the availability of additional funds.

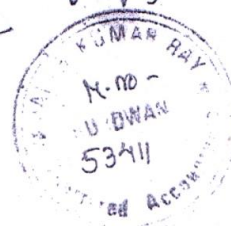
4. Certified that the grant of Rs. 8,73,800/- (Rupees Eight lakh seventy three thousand eight hundred only) allocated by the University Grants Commission under the scheme of support for Major Research Project entitled "Recognition and selectivity of molecules and ions using some heterocycle based fluorescent probes: Photophysical and electrochemical exploration." vide UGC letter No. F. 42 – 390 / 2013 (SR) dated 25/03/2013; and received Rs. 1,99,200/- (One lakh nintynine thousand two hundred only) as 2nd installment [FD Diary No. 5061 dated 27.06.2016] from the University Grants Commission has been fully utilized for the purpose for which it was sanctioned and receivable amount of Rs. 43,333/- (Rupees Forty three thousand three hundred thirty three only) that has already been utilized for the purpose for which it was proposed to sanction in accordance with the terms and conditions laid down by the University Grants Commission.


SIGNATURE OF PRINCIPAL INVESTIGATOR

Dr. Tandraima Chaudhuri
Principal Investigator
UGC, Major Research Project
F. No-42-390 / 2013 (SR)


REGISTRAR/PRINCIPAL

Teacher-in-Charge
Dr. Bhupendra Nath Dutta
Smriti Mahavidyalaya
Hatgobindapur, Burdwan.





ज्ञान-विज्ञान विमुक्तये

Annexure – IX

**UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI – 110 002.**

**PROFORMA FOR SUBMISSION OF INFORMATION AT THE TIME OF
SENDING THE FINAL REPORT OF THE WORK DONE ON THE
PROJECT**

1. NAME AND ADDRESS OF THE PRINCIPAL INVESTIGATOR:

Dr. Tandrima Chaudhuri, Head, Department of Chemistry, Dr. Bhupendranath Dutta Smriti Mahavidyalaya, Hatgobindopur, Burdwan, W. Bengal. **Pin- 713407.**

b NAME AND ADDRESS OF THE INSTITUTION:

Dr. Bhupendranath Dutta Smriti Mahavidyalaya, Hatgobindopur, Burdwan, W. Bengal. **Pin- 713407.**

3. UGC APPROVAL NO. AND DATE: **F.No. 42 – 390/2013(SR) dated 25/03/2013**

4. DATE OF IMPLEMENTATION: **01/04/2013**

5. TENURE OF THE PROJECT: **3 years**

6. TOTAL GRANT ALLOCATED : **Rs. 8,73,800/-**

7. TOTAL GRANT RECEIVED : **Rs. 8,14,000/-**

8. FINAL EXPENDITURE: **Rs. 8,57,333/-**

9. TITLE OF THE PROJECT : “Recognition and selectivity of molecules and ions using some heterocycle based fluorescent probes: Photophysical and electrochemical exploration.”

10. OBJECTIVES OF THE PROJECT :

1. To develop technique of different functional Molecule recognition in organic solvent medium.
2. To investigate the detailed molecular mechanism of the interaction whether it is mixed or simple PET, ICT or FRET based sensing.
3. Also to detect the detail mechanism of molecular interaction with environmental alterations.
4. To generate more efficient technique for anion recognition in organic and aqueous medium
5. To develop photophysical way of recognizing essential metal ions.

11. WHETHER OBJECTIVES WERE ACHIEVED: (GIVE DETAILS)

Considering all the 5 objectives of this project, works have been done vividly. Molecular recognition covers all its aspects where recognition or sensing of different types of molecules are considered. All are listed and described below. Sensing of metal ion and anions were also done along with environment variation study. All are listed here.

- (i) Two international publications on Fullerene recognition were done (*J. Lumin.* 147 (2014) 253 and *Spectrochim Acta A.* 137 (2015) 1258);
- (ii) One crown-ether recognition work is also published (*J. Lumin* 161(2015)164–173) along with rotaxane and pseudorotaxane type molecular machine formation (*RSC Adv.* 4 (2014) 18835, *J. Molecule. Struc.* 1097 (2015) 6 – 14). This Rotaxane type works were done in collaboration with Prof. C. Mukhopadhyay of Calcutta University who was my collaborator in this project.
- (iii) Sensing of Nitro Aromatic Compounds (NAC) related three works were done. One is published and two more were communicated (*J. Lumin.* 158 (2015) 286 – 293, 2 more communicated).
- (iv) Regarding the mechanistic study of molecular recognition two such work were already published. One was H-bonding recognition (*Photochem. Photobiol. Sci.* 14 (2015) 1207 – 1212.) and another was Steric factor recognition (*Spectrochim Acta A.* 159 (2016) 141–145.).
- (v) Works on recognition of Polyaromatic hydrocarbons the environmental pollutants, were also done and is published (*RSC Adv.* 6 (2016) 59237).
- (vi) Solvent environmental effects were studied using a highly fluorescent newly synthesized compound with my collaborator (*Org. Biomol. Chem.* 13 (2015) 11674 – 11686.).
- (vii) From different corners of chemists huge works on metal ion sensing have been going on. We have touched it just a little with a single Cu^{+2} sensing work that was just communicated.

- (viii) Solid state sensing of Fluoride ion has been done with excellence and was communicated to journal for publication. Another work of Fluoride ion sensing in solution phase was also reported using Bodipy laser dye (Communicated).
- (ix) Few more works of essential metal ions are still going on.

12. ACHIEVEMENTS FROM THE PROJECT :

In terms of achievements

- 10 International publications and 5 more communicated works were a great deal of success out of this little fund sanctioned for working in an undergraduate college.
- Sensing of NAC like explosives, Polyaromatic hydrocarbons like environmental pollutants, Crown ether and or fullerene like multifunctional compounds are achieved with success.
- Metal ion and Anion sensing works all signifies contribution to hard core scientific research done out of this small fund and infrastructure.
- More over Ph.D. degree registration of the project fellow is also signifies its success of work.

13. SUMMARY OF THE FINDINGS (IN 500 WORDS)

Out of the instrument head of this first grant only two basic apparatus (Weighing machine and Sonicator) were purchased in my college. With only these two I don't know how UGC thought one can do some basic research, I don't know!!! I have to cross a miles of hurdle to reach this point today. Each and every instrumental measurement I have to do in collaborators or co-Investigators lab. It's really a tough job to work in some others lab. I think UGC has nothing to bother with these college teachers. With the overhead grant small infrastructure was developed. The only help is Scholar, that person is appointed out of this project. But here also after first grant no other fund have been sanctioned, even not the fellowship! That is another hurdle I have to face, getting this project. I myself have to pay advance fellowship to this project fellow out of my salary. I don't know whether that will be recovered any time in my life or not? In summarizing these hurdles I should conface that it is really a bad experience for me getting approval of this major project grant for first time in my life from UGC. And probably I shall not do such fowl in future by applying any major research grant from UGC.

Achievements I have already mentioned above. Still I am repeating that here. 9 International publications and 6 more communicated works were a great deal of success out of this little fund sanctioned for working in an undergraduate college. Sensing of NAC like explosives, Polyaromatic

hydrocarbons like environmental pollutants, Crown ether and or fullerene like multifunctional compounds are achieved with success. Metal ion and Anion sensing works all signifies contribution to hard core scientific research done out of this small fund and infrastructure. More over Ph.D. degree registration of the project fellow is also signifies its success of work.

I think this much of achievements after facing so many hurdles is not a matter of jock at all.

14. CONTRIBUTION TO THE SOCIETY (GIVE DETAILS)

Here in this time bound UGC funded major research project entitled "Recognition and selectivity of molecules and ions using some heterocycle based fluorescent probes: Photophysical and electrochemical exploration." we have to mention the importance of sensing or recognition work as contribution to the society. Here in this project we have covered mainly two aspects of recognition, viz. Molecular and Ionic; i.e. molecular recognition as well as ionic recognition in solvent medium and also in solid state. We have considered both metal ion sensing as well as anion sensing in the ionic recognition portion. The applications or importance of this sensing works has been listed here point wise as the work is done.

- **Fullerene recognition:** Fullerene is largely used in energy conservation solar cell formation or artificial photosynthetic device [1-10]. In the cell it acts as electron acceptors. In presence of various donors like porphyrines, phthalocyanins and bodipy etc.; fullerene can be used as good transporter of electrons as well as of energy. So it is very important to recognize different type fullerenes to identify their efficiency in electron accepting ability. We have done two such international publications where fullerene recognition works are published. Those are; (a) *J. Lumin.* 147 (2014) 253 and (b) *Spectrochim Acta A.* 137 (2015) 1258.

- **Crown ether recognition:** In the advancement of molecular machine, supramolecular chemistry of crown ethers is vigorously studied only because of its huge variety of applications [11-14]. The threading of a linear axle into a cavity is studied mostly using ¹H NMR [15] and the cavity chosen is dibenzo-24-crown-8 (DB24C8) or its derivative [16] in most of the cases. Latest reporting of the lowest cavity threaded is 20-crown-6 also established through NMR study [17]. But fluorescent mechanism of detection is studied vigorously along with computation in this project work successfully. We have done five such international publications where crown ether recognition works are published explaining the mechanism of recognition. Those are; (a) *RSC Adv.* 4 (2014) 18835; (b) *Tetrahedron* 70 (2014) 6885; (c) *J. Lumin.* 161(2015)164; (d) *J. Molecule. Struc.* 1097 (2015) 6; (e)

Spectrochim Acta A. 159 (2016) 141.

➤ **Hazardous materials recognition:**

Polycyclic aromatic hydrocarbons (PAHs) are significant environmental pollutants due to their mutagenic and carcinogenic properties [18]. We report first unusual H-bonding based recognition of PAH using Bodipy laser dye in simple ethanol medium. This work is recently published in *RSC Adv.* 6 (2016) 59237.

Nitroaromatic compound recognition is an ongoing urgent issue in international security aspect. A number of satisfactory chemosensors for NACs, with particular importance to TNT have been reported [19–32] to date. Still mechanism of detection of NAC using discrete fluorophores are least studied. We have attempted a few in this project work. One has been published in *J. Lumin.* 158 (2015) 286 – 293, and another is communicated under review.

Beside that recognition of different hazardous metal ions and anions are also attempted. Few successful works are communicated but yet not published.

References:

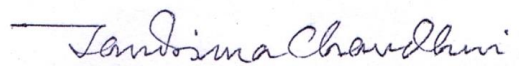
- [1] A. Loudet, K. Burgess, *Chem. Rev.* 107 (2007) 4891.
- [2] G. Ulrich, R. Ziessel, A. Harriman, *Angew. Chem. Int. Ed.* 47 (2008) 1184.
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- [6] F. D'Souza, O. Ito, Electron transfer in self-assembled supramolecular fullerene based donor-acceptor conjugates, in: H.R. Nalwa (Ed.), *Handbook of Organic Electronics and Photonics*, 1, American Scientific Publishers, Valencia, CA, USA, 2008, p. 485. (Chapter 13).
- [7] F. D'Souza, O. Ito, Tetrapyrrole-nanocarbon hybrids: self-assembly and photoinduced electron transfer, in: K.M. Kadish, K.M. Smith, R. Guilard (Eds.), *Handbook of Porphyrin Science*, 1, World Scientific Publishing, Singapore, 2010, p. 307.
- [8] T. Natori, S. Natori, A. Kanasashi, K. Tsuchiya, K. Ogino, *J. Polym. Sci. B: Polym. Phys.* 51 (2013) 368.
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- [11] (a) L. Avram, Y. Cohen, *J. Org. Chem.* 67 (2002) 2639; (b) K. Ghosh, H. Yang, B.H. Northrop, M.M. Lyndon, Y. Zheng, D.C. Muddiman, J.P. Stang, *J. Am. Chem. Soc.* 130 (2008) 5320; (c) W. Jiang, H.D.F. Winkler, C.A. Schalley, *J. Am. Chem. Soc.* 130 (2008) 13852; (d) M. Asakawa, C.L. Brown, S. Menzer, F.M. Raymo, J.F. Stoddart, D.J. Williams, *J. Am. Chem. Soc.* 119 (1997) 2614; (e) W.S. Bryant, I.A. Guzei, A.L. Rheingold, H.W. Gibson, *Org. Lett.* 1 (1999) 47; (f) R. Hernandez, H. Tseng, J.W. Wong, J.F. Stoddart, J.I. Zink, *J. Am. Chem. Soc.* 126 (2004) 3370.
- [12] (a) L. Li, G.J. Clarkson, *Org. Lett.* 9 (2007) 497; (b) D. Castillo, P. Astudillo, J. Mares, F.J. González, A. Vela, J. Tiburcio, *Org. Biomol. Chem.* 5 (2007) 2252.
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15. WHETHER ANY PH.D. ENROLLED/~~PRODUCED~~: Yes enrolled
OUT OF THE PROJECT

16. NO. OF PUBLICATIONS OUT OF THE PROJECT :
(PLEASE ATTACH RE-PRINTS)

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| Published | <ol style="list-style-type: none">1. "Molecular recognition of [70]-fullerene is efficiently done using BODIPY laser dye" <i>J. Lumin.</i> 147 (2014)253.2. "Pseudorotaxane type molecular machine is developed on the basis of axel-crown ether interaction in the ground state detected through ¹H NMR and Monte Carlo population study." <i>RSC Adv.</i> 4 (2014) 18835.3. "Charge transfer in the electron donor-acceptor complexes of a <i>meso</i>-Phenol BODIPY dye with chloranils and fullerenes" <i>Spectrochim Acta A.</i> 137 (2015) 1258-1264.4. "ICT based molecular recognition of 2,5-dinitrophenol in methanol" <i>J. Lumin.</i> 158 (2015) 286 – 293.5. "Molecular recognition of 4'-Nitrobenzo-15-crown-5 by bis(benzimidazolium)propane borontetrafluoride in acetonitrile" <i>J. Lumin</i> 161(2015)164-173.6. "Molecular recognition of H-bonding interaction in presence of π-stacking in Quinone-BODIPY type interacting system" <i>Photochem. Photobiol. Sci.</i> 14 (2015) 1207 – 1212.7. "The idiosyncrasies of (BBIM-alkane)DB30C10 MIMs" <i>J. Molecule. Struc.</i> 1097 (2015) 6 – 14.8. "Synthesis and photophysics of selective functionalized π-conjugated, blue light emitting, highly fluorescent C7-imidazo indolizine derivatives" <i>Org. Biomol. Chem.</i> 13 (2015) 11674 – 11686.9. "Recognition of steric factor in external association of xanthenocrown-5 and bis-naphthalenocrown-6 with bis(benzimidazolium)propane borontetrafluoride" <i>Spectrochim Acta A.</i> 159 (2016) 141-145.10. "Bodipy recognizes polyaromatic hydrocarbons via C-H/F type weak H-bonding" <i>RSC Adv.</i> 6 (2016) 59237.11. "Novel Rearrangement Followed by Ring Contraction of Highly Selective and Sensitive Turn-On Chromogenic and Fluorescent Chemodosimeters for Cu²⁺ Ions" <i>Asian Journal of Org. Chem.</i> DOI: 10.1002/ajoc.201600371 <hr/> |
| Communicated | <ul style="list-style-type: none">• Fluoride ion sensing:<ol style="list-style-type: none">1. "Bodipy as Fluoride ion sensor". Communicated2. "A solid state selective colorimetric chemosensor for fluoride and acetate and its modes of interaction". Communicated• Molecular recognition of hazardous materials.<ol style="list-style-type: none">1. "Picric acid sensor: Wavelength ratiometric way". Communicated2. "NAC sensing via π-π stacking". Communicated. |


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