



Post Graduate Department of Physics
University of Jammu, Jammu Tawi-180006, India
NAAC accredited A+ Grade

Dr. Sandeep Arya
Assistant Professor

No. PGD/PHY/24/16
Date: 15-05-2024

The Dean (Research Studies)
University of Jammu
Jammu


Subject: Submission of Final Report and Utilization Certificate of the Financial Assistance provided out of Research & Seed Grant.

Madam,

In reference to the letter issued from your office vide No. DRS/24/648-751, dated: 06.05.2024, I am submitting the final report of the work entitled "*Synthesis and characterization of carbon based materials as supercapacitors*" along with duly signed Utilization Certificate for which I have received the financial assistance out of Research & Seed Grant.

Thanking you.

Yours Sincerely



Dr. Sandeep Arya

Enclosures:

1. Utilization certificate duly endorsed by Finance Officer & D.R.(Grants)
2. Final Report

UNIVERSITY OF JAMMU
UNIVERSITY OF JAMMU RESEARCH FUND (UoJRF)
Form-V
PROJECT COMPLETION REPORT
(Submit in duplicate)

1. **Title of the project:** Synthesis and characterization of carbon based materials as supercapacitors

2. **Name & Designation of Principal Investigator:** Dr. SANDEEP ARYA
Assistant Professor
Department of Physics
University of Jammu, Jammu-180006

3. **Name & Designation of Co- Principal Investigator/s:** NA

4. **Duration of the project:** 1 Year 2 Months

5. **Sanctioned grant:** Rs 2,00,000/-

6. **Date of initiation of the project:** 21-01-2023

7. **Date of closure of the project:** 31-03-24

8. **Whether the Utilization Certificate and statement of expenditure has been submitted?** Yes
(If yes, mention the date and append the photocopy of the same)
(If no, the reasons thereof)

Submitted on 15-05-2024 (photocopy attached as ANNEXURE-1)

9. **Approved objectives:**

The objectives are as follows:

- i. To synthesize carbon materials and their composites by using sol-gel technique. During synthesis, the effect of various growth conditions such as time, concentration of precursors, pH and temperature of reaction on the properties of the synthesized materials will be studied.
- ii. To investigate the structural, morphological and electrochemical information of the synthesized carbon composites by employing different characterization techniques such as FE-SEM, HR-TEM, XRD, EDX, FTIR, Raman, XPS, etc.
- iii. To test the synthesized materials as supercapacitors by evaluating the cyclic voltammetry (CV), galvanostatic charge discharge (GCD) test, and electrochemical impedance spectroscopy (EIS), etc. The performance of the tested materials will be compared with the other reported work. Enhanced performance of the tested carbon composites will be reported in the form of a research paper in a reputed journal.

10. **Title of the research paper published from out of the current project work (If any, attach reprint)**

Submitted to the Journal, article is under review.



11. Title of the research paper accepted for publication from current research work (If any, attach copy of acceptance letter)

Nil

12. Report of the completed research project highlighting the deliverables (Attach document- Min. 3000 words)

attached as ANNEXURE-2

13. Details of the consumable and non-consumable (including equipment) material procured from current research project grant.

The details are as follows:

S. No.	Name of the Budget Head	Amount Utilized	Balance Amount
1.	Minor Equipments		
a.	Magnetic Stirrer	Rs. 24,000/-	
b.	pH Meter	Rs. 18,500/-	
c.	Ultrasonicator	Rs. 24,999/-	
Amount sanctioned for Minor Equipments = Rs. 1,00,000/-		Rs. 67,499/-	Rs. 32,501/-
2.	Consumables		
a.	Chemicals	Rs. 13,076/-	
b.	Printing papers	Rs. 22,400/-	
c.	Stationary Items	Rs. 1,650/-	
d.	Stationary Items	Rs. 12,600/-	
Amount sanctioned under consumables = Rs. 50,000/-		Rs. 49,726/-	Rs. 274/-
3.	Contingency		
a.	Contingent Items	Rs. 7,500/-	
b.	Characterization Bill	Rs. 17,346/-	
c.	Characterization Bill	Rs. 2,124/-	
Amount sanctioned under contingency = Rs. 50,000/-		Rs. 26,970/-	Rs. 23,030/-
Total		Rs. 1,44,195/-	Rs. 55,805/-

14. Has the non-consumable material (including equipment) been handed over to the concerned department?

Yes

(If yes, attach a certificate issued by concerned HoD in this regard)

attached as ANNEXURE-3

15. Has the stock register carrying entries of consumable/ non-consumable (including equipment)

handed over to the concerned department?
(If yes, attach a certificate issued by concerned HoD in this regard)

Yes

attached as ANNEXURE-4

16. Was power point presentation of the current research work made before DRPMC by PI/Co-PI?

Yes

(If yes, attach a certificate issued by concerned Dean/ HoD in this regard)

Comments of the concerned DRPMC

The work done is good with all objectives and goals met. There is no deviation done from the objectives mentioned.

Members of the concerned DRPMC

- 1 Prof. Anju Bhasin Anju Bhasin
- 2 HOD, Physics Anju 17/5/2024
- 3 Prof. Naresh Padha Naresh Padha
- 4 Prof. Rakesh Vaid Rakesh Vaid
- 5 Dr. Rani Deri Rani Deri

Dr. Sandeep Arya

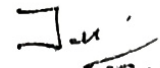
UTILIZATION CERTIFICATE

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13/05/2024
Dr. Sandeep Arya

(PI)
Assistant Professor
Dept. of Physics
University of Jammu


Dy. Registrar
University of Jammu
(Grants)
14/5


Finance Officer
University of Jammu
(UoJ)