THE UNIVERSITY OF UTAH

31 January 1989

HAND CARRIED BY PRINCIPAL INVESTIGATOR

Revised Budget
ple / AAMD ER-64

RYSZARD GAJEWSKI
U S DEPARTMENT OF ENERGY
ACQUISITION & ASSISTANCE MANAGEMENT DIVISION
OFFICE OF ENERGY RESEARCH, ER64 DOE
19901 GERMANTOWN ROAD
GERMANTOWN MD 20874

SUBJECT: Revised Budget
University of Utah PID No. 8808032

Dear Mr. Gajewski:

We are enclosing one copy of the revised budget for the project entitled "THE BEHAVIOR OF ELECTROCHEMICALLY COMPRESSED HYDROGEN AND DEUTERIUM" under the direction of Dr. B. Stanley Pons, Department of Chemistry. This document has been signed by an authorized official of the University of Utah.

This budget revision is in the amount of $216,312 for the performance period 1 October 1988 to 30 September 1989.

We appreciate your consideration of this proposal and look forward to hearing from you when your review is completed.

Very truly yours,

Richard H. Timpson
Director
Sponsored Projects

kb

Enclosure

cy: B. Stanley Pons
Dr. Hugo Rossi, Dean

Office of Sponsored Projects
309 Park Building
Salt Lake City, Utah 84112
(801) 581-6903
Fax Machine (801) 581-3007

OMB Approval No. 0348-0006

FEDERAL ASSISTANCE

2. APPLICANT'S APPLICATION IDENTIFIER	a. NUMBER	3. STATE APPLICATION IDENTIFIER	a. NUMBER
	b. DATE Year month day 19 89 01 31	NOTE: TO BE ASSIGNED BY STATE	b. DATE ASSIGNED Year month day 19

1. TYPE OF SUBMISSION (Mark appropriate box)
- ☐ NOTICE OF INTENT (OPTIONAL)
- ☐ PREAPPLICATION
- ☒ APPLICATION

Leave Blank

SECTION I—APPLICANT/RECIPIENT DATA

4. LEGAL APPLICANT/RECIPIENT
- a. Applicant Name: University of Utah
- b. Organization Unit: Stanley Pons
- c. Street/P.O. Box: Department of Chemistry
- d. City: Salt Lake City
- e. County: Salt Lake
- f. State: Utah
- g. ZIP Code: 84112
- h. Contact Person (Name & Telephone No.): Stanley Pons (801) 581-4760

5. EMPLOYER IDENTIFICATION NUMBER (EIN): 187600525A1

6. PROGRAM (From CFDA)
- a. NUMBER: 8 1 . 0 4 9
- MULTIPLE ☐
- b. TITLE: Basic Energy Sciences

7. TITLE OF APPLICANT'S PROJECT (Use section IV of this form to provide a summary description of the project.)

The Behavior of Electrochemically Compressed Hydrogen and Deuterium

8. TYPE OF APPLICANT/RECIPIENT
A—State; B—Interstate; C—Substate Organization; D—County; E—City; F—School District; G—Special Purpose District; H—Community Action Agency; I—Higher Educational Institution; J—Indian Tribe; K—Other (Specify):
Enter appropriate letter: I

9. AREA OF PROJECT IMPACT (Names of cities, counties, states, etc.): Salt Lake City

10. ESTIMATED NUMBER OF PERSONS BENEFITTING: 5

11. TYPE OF ASSISTANCE
A—Basic Grant; B—Supplemental Grant; C—Loan; D—Insurance; E—Other
Enter appropriate letter(s): A

12. PROPOSED FUNDING

a. FEDERAL	$ 216,312 .00
b. APPLICANT	40,000 .00
c. STATE	.00
d. LOCAL	.00
e. OTHER	.00
f. Total	$ 256,312 .00

13. CONGRESSIONAL DISTRICTS OF:
- a. APPLICANT: Utah 2nd
- b. PROJECT: Utah 2nd

15. PROJECT START DATE Year month day: 19 88 10 1

16. PROJECT DURATION: 36 Months

18. DATE DUE TO FEDERAL AGENCY ▶ Year month day 19

14. TYPE OF APPLICATION
A—New; B—Renewal; C—Revision; D—Continuation; E—Augmentation
Enter appropriate letter: A

17. TYPE OF CHANGE (For 14c or 14e)
A—Increase Dollars; B—Decrease Dollars; C—Increase Duration; D—Decrease Duration; E—Cancellation; F—Other (Specify):
Enter appropriate letter(s):

19. FEDERAL AGENCY TO RECEIVE REQUEST: DOE Office of Energy Research

20. EXISTING FEDERAL GRANT IDENTIFICATION NUMBER

a. ORGANIZATIONAL UNIT (IF APPROPRIATE): Office of Energy Research

b. ADMINISTRATIVE CONTACT (IF KNOWN): Ryszard Gajewski

c. ADDRESS: Acquisition and Assistance Management Division
Office Energy Research ER64 DOE Washington DC 20545

21. REMARKS ADDED ☐ Yes ☒ No

SECTION II—CERTIFICATION

22. THE APPLICANT CERTIFIES THAT ▶ To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.

a. YES, THIS NOTICE OF INTENT/PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE _____

b. NO, PROGRAM IS NOT COVERED BY E.O. 12372 ☐
OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW ☐

23. CERTIFYING REPRESENTATIVE
- a. TYPED NAME AND TITLE: James J. Brophy, Vice President for Research
- b. SIGNATURE: James J Brophy

SECTION III—FEDERAL AGENCY ACTION

24. APPLICATION RECEIVED Year month day 19

25. FEDERAL APPLICATION IDENTIFICATION NUMBER

26. FEDERAL GRANT IDENTIFICATION

27. ACTION TAKEN
- ☐ a. AWARDED
- ☐ b. REJECTED
- ☐ c. RETURNED FOR AMENDMENT
- ☐ d. RETURNED FOR E.O. 12372 SUBMISSION BY APPLICANT TO STATE
- ☐ e. DEFERRED
- ☐ f. WITHDRAWN

28. FUNDING

a. FEDERAL	$ .00
b. APPLICANT	.00
c. STATE	.00
d. LOCAL	.00
e. OTHER	.00
f. TOTAL	$ .00

29. ACTION DATE ▶ Year month day 19

30. STARTING DATE Year month day 19

31. CONTACT FOR ADDITIONAL INFORMATION (Name and telephone number)

32. ENDING DATE Year month day 19

33. REMARKS ADDED ☐ Yes ☐ No

OFFICIAL FILE COPY

ER F 4620.1
(7-85)

U.S. Department of Energy
Grant Application Budget Period Summary
(See Reverse for Definitions and Instructions)

OMB Approval
No. 1910-1400

Please Print or Type

Organization:	Period Covering:	FOR DOE USE ONLY
University of Utah	From: 10-1-88	Proposal No:
Principal Investigator (P.I.)/Project Director (P.D.): Stanley Pons	To: 9-30-89	Award No.:

A. SENIOR PERSONNEL PI/PD Co PIs, Faculty and Other Senior Associates (List each separately with title, A.6 show number in brackets. Attach separate sheet, if required.)	DOE Funded Person-Mos. Cal.	Acad.	Sumr.	Funds Requested By Applicant $
1. Martin Fleischmann, Co PI, Professor	4			16,000
2. No Employee Benefits/From England				
3.				
4.				
5.				
6. (1) TOTAL SENIOR PERSONNEL				
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)				
1. (1) POST DOCTORAL ASSOCIATES	12			20,000
2. (1) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	12			18,000
3. (2) GRADUATE STUDENTS	12			20,000
4. ( ) UNDERGRADUATE STUDENTS				
5. ( ) SECRETARIAL-CLERICAL				
6. ( ) OTHER				
TOTAL SALARIES AND WAGES (A + B)				74,000
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS) Postdoc 14%; Techn. 30%; Grad. Stu. 8%				9,750
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				83,750
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM) Calorimeter for temp msmt				23,500
3 Potentiostat-galvanostats-power for cells				17,940
1 Waveform generator for potential programs				5,790
Temp tranducers, PC for control and recording				11,000
TOTAL EQUIPMENT				58,230
E. TRAVEL 1. DOMESTIC (INCL. CANADA AND U.S. POSSESSIONS)				
2. FOREIGN Fleischmann to Utah to participate in work				2,500
F. OTHER DIRECT COSTS				
1. MATERIALS AND SUPPLIES Rods, heavy water, other metals				48,000
2. PUBLICATION COSTS/PAGE CHARGES				500
3. CONSULTANT SERVICES				
4. COMPUTER (ADPE) SERVICES				
5. CONTRACTS AND SUBGRANTS				
6. OTHER				
TOTAL OTHER DIRECT COSTS				48,500
G. TOTAL DIRECT COSTS (A THROUGH F)				192,980
H. INDIRECT COSTS (SPECIFY RATE AND BASE) 47% Direct Costs, except equipment				
TOTAL INDIRECT COSTS				63,332
I. TOTAL DIRECT AND INDIRECT COSTS (G & H)				256,312
J. APPLICANT'S COST SHARING (IF ANY)				40,000
K. TOTAL AMOUNT OF THIS REQUEST (ITEM I LESS ITEM J)				216,312

For Further Information, Other Than Technical Content Contact [illegible] H. Timpson Sponsored Projects 801-581-6903

PI/PD TYPED NAME & SIGNATURE Stanley Pons	DATE 1/31/89
INST. REP. TYPED NAME & SIGNATURE JAMES J. BROOKS Vice President For Research	DATE JAN 31 1989

Equipment Justification

Potentiostat-galvanostats are instruments used for accurately controlling the potential and/or current applied between the electrodes in the cell. There will be several of these operating at the same time, and for extended periods of time. We have requested three of these to control three cells simultaneously. Suitable instruments cost $5,980 each.

The calorimeter setup requested will consist of glass evacuated dewar type cells to contain the rods, counter electrodes, and solutions; two constant temperature baths to hold the cells; accurate thermistors and voltmeters to monitor relative changes in the temperature of the cells and bath; and a scintillation counter to monitor the changes in the tritium content of the dewars. The cost of these components is $23,500.

A waveform generator is requested to drive the potentiostats above when applying potential programs to the experiments. This device will be required for experiments dealing with the determination of the heavy water equivalent of each cell. These experiments require precise timing of applied voltage/current levels. The cost for a suitable instrument is $5,790.

A personal computer is requested for recording of the various variables in the experiments: cell current, cell voltage, applied voltage, bath temperature, dewar temperature, and scintillation counts for blanks, controls, and dewars. The device will also be used for calculation and plotting of the cooling curves and thermal equivalents, as well as general calculations. Interfaces for the various transducers (A/D converters; suitable bus configuration), extended memory, large hard disk, and a printer output are required. The components cost $11,000.

Travel Justification

Professor Fleischmann intends to travel from the University of Southampton, Southampton, UK, to London to Salt Lake, and return, two times during the first year. Travel to London return is calculated to be $70, and airfare (return) from Gatwick to Salt Lake (recent cheapest fare) calculated to be $1,180 either on Delta or British Air-Continental. For two trips, this is $2,500. Professor Pons will be responsible for local expenses in Salt Lake City.

Materials and Supplies

The metal rod electrodes are to be purchased in 10 to 20 cm lengths and in diameters from 1 to 30 mm. High purity metals are required. High purity deuterium oxide is used as the solvent and fuel. We estimate that we will require 20 kG during the first year. Platinum wire will be used as the counter electrode in each cell. Each cell requires approximately 5 feet of wire. In addition, there will be Pt supports, framing, and wire necessary for the neutron counting experiment, as well as a 50 x 50 x 1 mm Pd sheet as the working electrode. The costs for primary electrode metals will be $35,500, platinum $4,500, and deuterium oxide $8,000.

ER F 4620.1A
(7-85)

U.S. Department of Energy

GRANT APPLICATION
PROJECT PERIOD SUMMARY

(Must be completed for all new and renewal applications.)

Please Print or Type

OMB Approval
No 1910-1400

Categories	01 Budget Period	02 Budget Period	03 Budget Period	04 Budget Period	05 Budget Period
A. Senior Personnel Totals	16000	18000	20000		
B. Other Personnel Totals	58000	60000	62000		
C. Fringe Benefit Totals	9750	9910	10070		
Total of A, B & C	83750	87910	92070		
D. Equipment	58230	10000	10000		
E. Travel 1. Domestic					
2. Foreign	2500	3000	3500		
F. Other Direct Costs	48500	52000	58000		
G. Total Direct Costs	192980	152910	163570		
H. Total Indirect Costs	63332	67168	72178		
I. Total Direct & Indirect Costs	256312	220078	235748		
J. Applicant's Cost-Sharing (If any)	40000	8000	8000		
K. Total Amount of Request (Item I. Less Item J.)	(1)* 216312 ✓	(2) 212078 ✓	(3) 227748 ✓	(4)	(5)

*This should equal item K on Budget Period Summary (ER/F/4620.1)

ESTIMATE

TOTAL COST OF PROJECT

$ 656,138

(add K(1) thru (5))