

FORM-D

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Human Resource Development Group
CSIR Complex, Library Avenue, Pusa, New Delhi - 110012
APPLICATION FOR GRANT UNDER
EMERITUS SCIENTIST SCHEME: FORMAT
(30 Copies of Project Proposal should be submitted to CSIR)

SECTION A: (GENERAL)

1. Name, date of birth & address of the scientist:

Name: Sankarampadi <u>ARAVAMUDHAN</u>	Date of Birth 01-12-1944
Address (Host institute): Department of Chemistry, North Eastern Hill University, PO NEHU Campus 793022, Shillong, Meghalaya. Address for Correspondence: (<i>As above at work</i>) & at Home: Qtr L-46, PO NEHU Campus, Mawkyntoh Umshing, Shillong 793022, EK Hills District, Meghalaya.	

2. Title of the Research Proposal:

COMPREHENDING INDUCED STATIC MAGNETIC FIELD DISTRIBUTION IN MATTER: WIDER BASIS FROM MAGNETIC RESONANCE MEASUREMENTS

3. Broad Areas of proposal research:

1. Magnetic Resonance: Experiments & Theory Parameters	2. Quantum Chemical Calculation of Magnetic Resonance Measurements
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4. Names and addresses of four research scientists actively engaged in the general area of the proposed research:

a) Dr.S.Ganapathy, Senior Scientist NMR Central Facility, National Chemical Laboratory Dr.Homi Bhabha Road, PUNE 411008 Maharashtra	b) Prof.G.Govil Department of Chemical Sciences Tata Institute of Fundamental Research Homi Bhabha Road COLABA Mumbai 400005 Maharashtra
c) Dr.A.C.Kunwar Head NMR Indian Institute of Chemical Technology [IICT] Tarnaka Hyderabad 500007 Andhra Pradesh	d) Prof.P.C.Mathias SIF and Department of Instrumentation Indian Institute of Science Bangalore 560012 Karnataka

5. Available Institutional facilities:

- a) At the present University (N.E.H.U.) Facilities for maintaining computer and provisions to eventually facilities for Magnetic resonance by acquiring Spectrometers
- b) At the Institute where ES proposes to work (if different) : In order to pursue this project, visits to other Institutes for appropriately existing NMR facilities and Workshop facilities. Human Resource as for as NMR work and assistance and collaboration are concerned are available in other institutes like Tata Institute of Fundamental Research, Mumbai; National Chemical laboratory, Pune; Indian Institute of Science, Bangalore; IITs at Kanpur, Mumbai, Guwahati and Chennai

6. Proposed budget:

	1 st Year	2 nd Year	3 rd Year
(a) Staff JRF SRF -----> RA	xxxxx Rs. 1,08,000 (1.1 Lakhs) xxxxx	xxxxx Rs. 1,08,000 (1.1 Lakhs) xxxxx	xxxxx Rs. 1,08,000 (1.1 Lakhs) xxxxx
(b) Contingency Chemical, samples, glassware etc. Maintenance Information search (from data bases) Travel Any other (Books & measuring equipments)	Rs. 50,000 Rs. 30,000 Rs. 50,000 Rs. 80,000 Rs. 50,000	Rs. 1,00,000 Rs. 40,000 Rs. 1,00,000 Rs. 80,000 Rs. 50,000	Rs. 1,00,000 Rs. 1,00,000 Rs. 1,00,000 Rs. 80,000 Rs. 50,000
(c) Equipment (itemwise) 1. Bruker/Resonance insts. Benchtop NMR 2. Computer Units	Rs. 50,00,000 Rs. 60,000	----- -----	Rs. 50,00,000 Rs. 1,00,000
(d) Total	Rs. 54,28,000 (55 Lakhs)	Rs. 4,78,000 (5 Lakhs)	Rs. 55,08,000 (55 Lakhs)

7. Justification of Budget (for each position, item of equipment and contingencies).

Staff: At this University, it has been the experience of this ES, that, personnel for appointing as staff in these kind of tasks is hard to come across. But, an effort should be made to be on the look out for persons who can gain know-how on these subject matters. **Contingency: Chemicals**.... In the recent past, at the stalls of vendors at Conference venues a great deal of innovative implements are being displayed which are meant specifically for increasing the ease, convenience of sample preparations and sample holders, sample containers and certain special type of sample tubes for NMR measurements of the type which would have to be requisitioned in this project. **Maintenance**... Expense amounts are estimated office-expenses: Xerox, Scanning, Spare cartridge for Printers, special quality print-papers, transparencies and Computer data storing devices like the secondary memories (removable discs), batteries and cells. **Information**.... It is intended to acquire software facilities for data bases and data processing; as in URL: http://www.geocities.com/amudhan_nehu/on_spectrasurf.html Also correspondences with "Seascape Learning" for acquiring DFT soft wares to calculate Chemical shifts are documented at http://saravamudhan.tripod.com/csir_schm_sa/ A software PCGAMESS for calculating Chemical shift parameters along with structure display/editor ARGUSLAB could be installed in a computer and are being tested for regular use. **Travel:** This ES has gained experience as the PI in the earlier CSIR project, and it is to be hoped that the ES would be able to have access to facilities in other institutes by being present at the Laboratories/FNMR facilities. This would be requiring at least four visits per year during the course of the project under the ES scheme. **Any other:** For completing the construction of the MAS probe which began in the CSIR research project (01-01-2002 to 31-12-2004), more components and few special parts from Bruker would have to be imported. Further it is also necessary to build up a library of current books and the recent test equipments for laboratory use.

Continued....item 7 Justifications

Equipment: A request for additional equipment grant was made in the previous CSIR Research project and the CSIR could not approve two bench top units which together amounted to Rs.72 Lakhs. Hence in this the same requirement is being sought in two stages. First during the first year one unit of the Bruker mini spec could be acquired and based on the experiences and progress, a second Benchtop unit could be acquired from resonance instruments UK. A report on these efforts are documented at http://saravamudhan.tripod.com/csir_schm_sa/ . Two computer units acquired in phases would ensure the possibility of continued effort on these initiatives for much longer durations even after the stipulated Scheme Terms are over.

8. Certificate

I have read the conditions of “Grants to Emeritus Scientist” and agree to abide by these.

Signature & date

9. Declaration and attestation of the head of the Institution/University where proposed work is to be carried out:

I agree to provide all facilities to the applicant:

Name of the Institution

Name of the Head/Executive Authority of the Institution:

Signature with date:

Seal:

SECTION B

BIODATA OF THE SCIENTIST

10. Biodata

a. Name	Sankarampadi ARAVAMUDHAN		
b. Designation (before superannuation)	Sr. Lecturer		
Date of superannuation	30-11-2006		
c. Full Official Address, Telephone, Fax, E-mail	Sankarampadi ARAVAMUDHAN Phone: +913642722624 Department of Chemistry Fax: +913642550486 North Eastern Hill University saravamudhan@nehu.ac.in PO NEHU Campus Mawkynroh Umshing SHILLONG 793022 Meghalaya INDIA		
d. Date of birth	01-12-1944		
e. Highest Degree University/ Institute Date	Ph.D., INDIAN INSTITUTE of Technology, Kanpur 17th May 1975		
f. Research specialization: (Major Scientific fields of interest): Magnetic Resonance: Theory, Experiment, Instrumentation			
g. Research experience during the last 5 years of service			
Institution	Year	Nature of work done	No. of papers published
North Eastern Hill University Shillong (Department of Chemistry)	2000-2006	<u>Experiment and Theory:</u> <u>Magnetic Resonance</u> Static Induced Magnetic Field Distributions & HR PMR in Solids: Consequences to Molecules and Materials Induced field calculations as could be relevant in Biomolecular magnetic Resonance. Implementing a CSIR Research project entitled " <u>Shielding Parameters of Nuclei.....Molecular Electronic Structure.</u> " http://saravamudhan.tripod.com/csir_schm_sa/	One in Refereed Indian Journal. Contributions/Presentations to National and International Conferences/Symposia Total number= 30 List can be displayed at http://www.geocities.com/inboxnehu_sa/aravamudhan_resume.html
h. List of Honors & Awards conferred, with dates:			
NONE			

SECTION C

DETAILED RESEARCH PROPOSAL

Your description should be comprehensive and brief and should in no case exceed 10 pages.

Information to be given below must illuminate the research ground to be covered through this project. The research objectives and the scientific perspective against which the project has been conceived should be clearly exposed to enable the Referees to arrive at a scientific judgment regarding it.

Give the particulars in the format shown below and send 30 (thirty) copies of the entire project to the following address:

Head, HRDG
CSIR Complex
Library Avenue, Pusa
New Delhi 110012

11. Title of the project

**Shielding Parameters of Nuclei: Tracking the Trends of
Experimentally Measured Values by Estimating the Induced Field
Contributions Related to Magnetic susceptibilities**

12. Summary of proposed research (up to 150 words) ----*Enclosed*

13. Detailed research plan or programme -----*Enclosed*

List of publications with full bibliographic details of papers highlighting those in Science Citation Index [SCI] journals, patents (with the names of all inventors and assignee(s), reports and books in last 10 years (use asterisks to identify publications relevant to this proposal). Also mark 10 best publications from the list.

List of contributions/publications enclosed