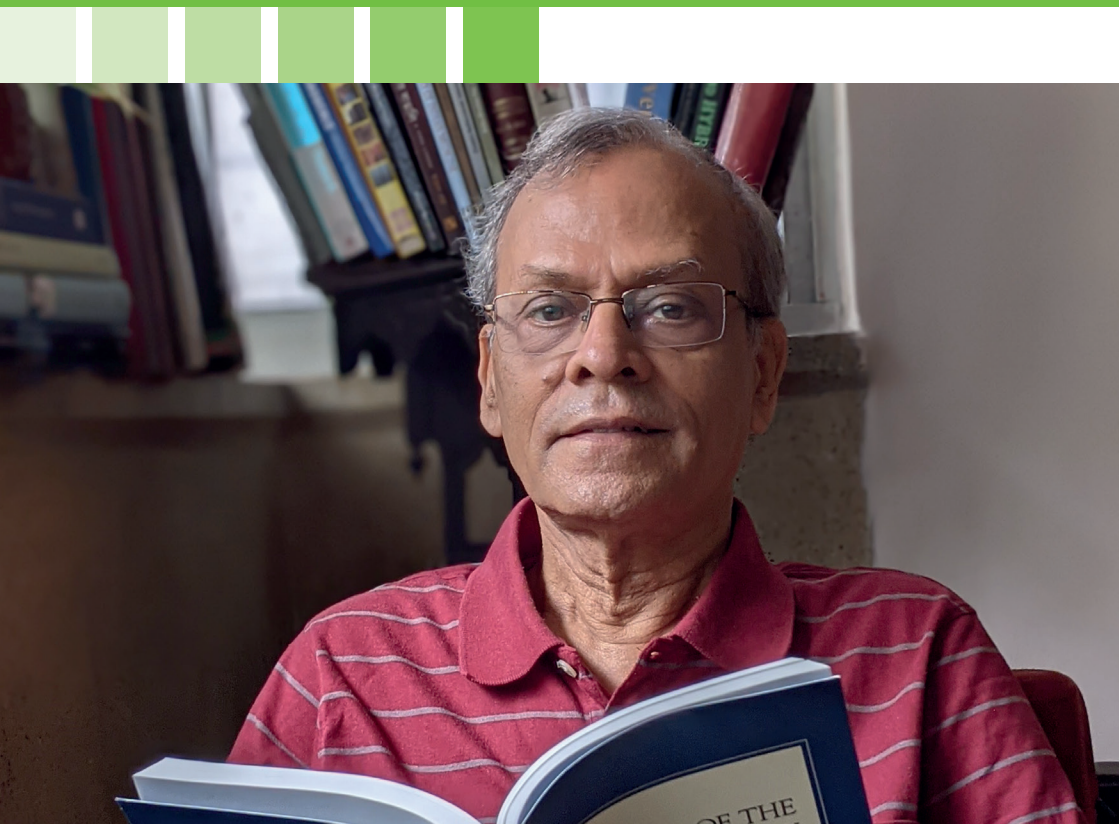


Suprakash C. Roy:
A Multidimensional Physicist
A story of courage and determination



Rajinder Singh

Sujata Roy

Wissenschaftsgeschichte / History of Science

Rajinder Singh, Sujata Roy

Suprakash C. Roy: A Multidimensional Physicist

A story of courage and determination

Shaker Verlag
Düren 2021

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Copyright Shaker Verlag 2021

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

Printed in Germany.

ISBN 978-3-8440-8190-9

ISSN 2198-8552

Shaker Verlag GmbH • Am Langen Graben 15a • 52353 Düren

Phone: 0049/2421/99011-0 • Telefax: 0049/2421/99011-9

Internet: www.shaker.de • e-mail: info@shaker.de

Content

Preface	v
Foreword.....	ix
About the authors	xiii
Introduction	1
Chapter 1 - Early Years and Family	7
Suprakash's education	13
Marriage and children.....	20
Chapter 2 – At the Bose Institute.....	27
Ph.D. work of Suprakash.....	31
SCR as Research Assistant and Ph.D. guide.....	36
SCR's other scientific activities at Bose Institute under the guidance of A.M. Ghose	39
SCR appointed as Professor and Chairman.....	41
Symposia organized under the leadership of SCR	44
Chapter 3 - Scientific Work and Landmark Achievements	53
Rayleigh and Compton scattering	53
Superheated Drop Detector	57
Biophysics	61
Medical physics	61
Ultrasonic.....	62
SCR - Building of scientific instruments	63
Radiation damage – Viscosity and lyoluminescence	68
Astrophysics	68
Landmark achievements.....	69
Scattering of gamma rays.....	70
Instrumentation	70

Dosimetry.....	71
Chapter 4 - International Connections	77
The ICRR and ISRP connections	77
At UPIT'T with R.H. Pratt.....	79
At Yale with R.E. Apfel	81
The International Radiation Physics Society connections.....	83
The Japan connection.....	86
Friends from his homeland abroad.....	87
His traveller friend from France	89
Meeting Nobel Laureates	90
Chapter 5 - S.C. Roy and <i>Science and Culture</i>	95
SCR's entry into <i>Science and Culture</i> - Not an accident	95
Some milestones	98
1. Sponsored special issues.....	98
2. Bringing new ideas	99
3. Left no stones unturned.....	101
4. Digitising the journal	102
5. New outlook and website.....	103
6. Science and Culture becomes self-sufficient financially ..	104
7. Encouraging international and national authors.....	106
8. Platinum Jubilee of ISNA and Science and Culture.....	108
9. And they did not sell their soul to 'Springer' and others.	109
End of an era.....	115
Chapter 6 - Opinions from Around the World	119
Samaresh Chandra Roy	119
Aloka Roy	121
Shubhabrata Roy.....	122

Barun Kumar Chatterjee	125
Jaideep Ghosh	132
George Sandison	133
David A. Bradley	134
Raúl Mainardi	138
Sarbarish Chakravarty	139
Antonia Hoogewerf	143
Manoranjan Biswas	147
Subhas Mitra	150
Mala Das	153
Dipanwita Pal	155
Rakesh Das	156
Chapter 7 - Honours and Awards	159
Life time achievement award	159
Chapter 8 - List of Publications	161
Publications in refereed journals – Scientific Publications	161
Papers published in Proceedings of symposia, seminars, etc.	169
<i>Science and Culture</i> publications	171
Editorials	171
Articles of general interest	173
Book reviews	175
‘Notes and News’	176
Bibliography	179
Index	189

Preface

The authors of this book come from two different professions. Rajinder Singh is a physicist and historian of science and technology while Sujata Roy is a computer professional. Sujata is S.C. Roy's wife.

My personal meeting with Suprakash C. Roy and Sujata was in the beginning of Jan 2011. I was invited by Prof. Samir K. Saha of Jadavpur University to deliver a lecture on "Kolkata - Nobel City - Nobel Prize nominators and nominees from Kolkata in the fields of Peace, Literature, Medicine & Physiology, Chemistry and Physics." It was Dr. Triguna Sen Memorial Lecture, organized by Alumni Association, University of Jadavpur, on Jan 10, 2011. Shortly before the visit, I published an article in *Science and Culture* on "Celebrating 125th birth anniversary of DM Bose - Invitation to the Como conference, Sci. Cult. 76, 494-501, 2010". I believe that this article had impressed him (SCR). I recall that SCR invited me for a meeting at the Bengal Club. My son Hira Michael Krah, at that time 14 years old, accompanied me. It was an unforgettable evening for the two of us to meet two wonderful persons, Sujata and Suprakash. That brought us closer and since then, we have written a number of articles, a few books and of course hundreds of e-mails.

During my last visit to Kolkata, Suprakash and I met and we planned to write on the 85th anniversary of the Indian Science News Association and *Science and Culture*. While travelling from his office to home, we were talking about age and health of people. He told me that he did not go to any gym but was still quite fit though close to 80. I understood him wrong and felt that he was soon going to be 80. That is when I thought of writing a book on him, one who is a successor of M.N. Saha's legacy, i.e. *Science and Culture*. The other reason is his life history which has some similarity with mine, i.e. a self-made man.

About writing this biography, I talked with Suprakash's wife Sujata, who agreed to support my idea, collect materials about their family, and work with me to write this book. It is mainly due to her that some of Suprakash's life stories came to be known to me.

Suprakash comes from a very modest family with a humble upbringing. But as a scientist, he showed the courage to move from experimental to theoretical atomic physics, from radiation physics to medical physics. And beyond physics, he played so many other roles, like the Editor-in-Chief of *Science and Culture*, a teacher, an author, an administrator etc. And we believe that we have achieved our goal in portraying Suprakash as a totem of hard work and devotion who could be a role model to the future students of India by demonstrating what can be achieved by sheer grit and determination.

Authors of the book have tried their best to be ‘objective’. Without any doubt, opinions of a wife, friends, relatives, and colleagues will be ‘subjective’. However, an attempt has been made to be as much ‘objective’ as possible based on documents, except the opinion part.

One of us (RS) has written different books on Indian physicists. However, it is my ‘debut’ attempt to write on a ‘living person’. To write on a contemporary person is always difficult as the author is under constant scrutiny or open to criticism after the publication.

Acknowledgements

First and foremost, we thank various persons for sending ‘Write ups’ on Suprakash, which have been published in this book. In order to avoid duplication, we may have made minor changes in the ‘write ups’. However, the message of the authors has remained unchanged.

The content of the book is based on ‘oral family history’ and different interviews in the form of e-mails. The authors thank S.C. Roy for providing all relevant documentary evidences and also taking the time for answering our questions, in particular, in explaining his scientific work.

One of us (R. Singh) thanks his wife (Birgit Krah) and children (Amer Simone and Hira Michael) for moral support. Thanks are also due to Prof. Michael Komorek, Research Group – Physics Didactic and Science Communication, Physics Institute, University of Oldenburg, Germany for research facilities. I also thank Petra Raue and Simone

Treunert, Head of ‘Grund- und Oberschule’ Syke, for helping me in one way or other.

One of us (S. Roy) thanks Prof. Barun K. Chatterjee for readily sharing documents and photographs as and when requested. She is also grateful to Prof. Hem Shanker Ray for agreeing to write the “Foreword” in spite of all his constraints.

Last but not the least, we thank Ms. Kristin Ladwig, Shaker Publisher for publishing this book.

Foreword

But this one thing I do,
Forgetting those that are behind.
And reaching forth unto those things
Which are before, I press on
Apostle St Paul

The quotation above seems to sum up the philosophy of Suprakash C. Roy based on whose life and career this book has been written. Suprakash has been a prolific scientific worker and a writer and I am sure that he will press on.

This book has given a full account of all Suprakash has done. However, I may well begin by writing a few words about him. After a brilliant academic career and a Ph.D. from Calcutta University, he worked in several areas of science. My own discipline is far removed from his and his scientific writings are abstruse for me. However, I know that he has done both theoretical and experimental work of high order and has a long list of publications which stands for his immense contribution. He has authored or co-authored some seven books also. It is admirable that for some of his work he built his own equipment which produced results as good as those obtained from commercially available equipment. One of his works in Yale University has found place in a graduate level textbook. The technology that he developed for building superheated drop detectors for measurement of radiation dose has been transferred to the Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam and Defense Research Laboratory, Jodhpur.

Suprakash has travelled widely in connection with his work and worked in the Universities of Pittsburgh, Yale and Purdue in the US and Calgary in Canada. He has been member/office bearer of several scientific bodies and on the editorial board of two reputed international journals. His landmark achievements include his work on Rayleigh and Compton scattering, Superheated Drop Detector and Medical Physics.

Suprakash has contributed immensely in another sphere with which I am more familiar and that is his work as Editor-in-Chief of the reputed journal *Science and Culture*. The journal is committed to its readers to keep them abreast of recent happenings in Science, Technology, Culture and Social Issues. Of particular interest is how the journal presents science for the common man or what some people call ‘Popular Science’.

Paul Dirac once said, “In science, one tries to tell people in a way as to be understood by everyone something no one knew before. But in poetry it is exactly the opposite”. By ‘everyone’, Dirac perhaps implied all who are well trained in science. For the common man, much of science is as abstract as poetry. This is where one needs gifted science writers who can explain to the common man the beauty of science in simple language to understand and enjoy. Charles Kettering once said, “There is a great difference between knowing a thing and understanding it”. Persons like Suprakash made efforts to make ordinary readers understand what they thought they knew.

Carl Sagan once wrote, “We live in a society exquisitely dependent on science and technology in which hardly anybody knew anything about science and technology”. Suprakash is among those who made great efforts to take science to people, among other things. And for his efforts, the main vehicle was *Science and Culture* of which he was the Editor-in-Chief for many years until he handed over the onerous job to a colleague. He was immensely successful in lifting the standard of the journal and now it carries a Citation Index. He has written numerous editorials on contemporary topics for almost all the issues. He made a special effort to persuade many scientific institutions to bring out special issues on their R & D activities. Of special mention is his efforts to publish short write ups on scientists of the past who deserve to be better known. The journal is rather unique as it carries in every issue articles on a variety of topics. Suprakash himself contributed articles frequently. For example, the Jan -Feb 2021 issue of the journal carries his editorial on COVID -19 and also an article titled Peer Review Process - its History and Evolution. He also brought for the journal financial security.

The publisher of Stephen Hawking's celebrated book 'A Brief History of Time' told the author to remove all mathematical equations from the book because, in his opinion, every single equation reduces readership by half. Eventually, Hawking kept only one equation in the book and that is the famous Einstein's equation relating Energy and Mass. Following this guideline, the articles published in the ordinary issues of *Science and Culture* have been mercifully free of complicated mathematics and chemical formulas and enjoyed wide readership. Yet many articles deal with sublime thoughts.

So far I have talked about Suprakash and not the book, but then these two are inseparable. In a way this is a unique book because very rarely does one find biographies of scientists who are still alive and active. This book gives a full account of Suprakash's life and career, starting from his early life cutting across all his achievements, research and otherwise. An attempt has also been made to understand Suprakash as a 'person' through the eyes of his acquaintances.

Authors of the book are also a unique combination: one is a veteran historian of science (Dr. Rajinder Singh) who has experience of writing more than 30 books on biographies of Indian scientists and has several books on joint authorship with the protagonist of this book. And the other one is the wife of the protagonist (Ms. Sujata Roy), a computer professional, having her debut attempt at writing a book after spending her entire professional life in the corporate IT sector. I am sure the result will be marvelous and I believe the scientific community would welcome this biography of one of their own and the younger generation will be inspired by reading the book.

Finally, I am happy that the authors requested me to write this "Foreword", knowing fully well that I am not a physicist; I feel honoured.

Prof. Hem Shanker Ray
Distinguished Alumnus, IIT Kharagpur
Formerly, Member of Faculty at IIT Kanpur and IIT Kharagpur
and Director, CSIR IMMT, Bhubaneswar

About the authors



Dr. Rajinder Singh, Research Group – Physics Education and Science Communication, Physics Institute, University of Oldenburg, 26111 Oldenburg, Germany.

E-Mail: rajinder.singh@uni-oldenburg.de

Website: <http://www.rajindersinghdr.npage.de>

Dr. Rajinder Singh is: Member of Editorial Team: *Sci. Cult.*, Kolkata (Indian Science News Association), and *Scientific Voyage*, Kolkata.

Dr. Rajinder Singh has written more than 140 articles and the following books:

- 1) Nobel Laureate C.V. Raman's Work on Light Scattering, Logos Publisher, Berlin 2004.
- 2) Nobel Laureate C.V. Raman's Science, Philosophy and Religion, Dharmaram Publications, Bangalore 2005.
- 3) Characteristics of Solar Radiation Photovoltaic Pyranometers - Licor 200SZ and Matrix 1G, Shaker Publisher, Aachen 2012.
- 4) (R. Singh, Ed.), "Jugend forscht – Schüler experimentieren" – nicht nur für Hochbegabte und Überflieger, Shaker Verlag, Aachen 2012.
- 5) Upendranath Brahmachari – A Pioneer of Tropical Diseases – A Summary of his Discoveries and Scientific Work, Shaker Publisher, Aachen 2013.

- 6) Nobel Prize Nominator Sisir Kumar Mitra F.R.S. - His Scientific Work in International Context, Shaker Publisher, Aachen 2014.
- 7) Mahatma Gandhi – ... the Missed Nobel Peace Prize, Shaker Publisher, Aachen 2015.
- 8) The Making of the Politician M. Gandhi by Muslims, Jews and Christians – Gandhi's Methods to Solve Immigration Problems, Shaker Publisher, Aachen 2015.
- 9) Inside Story of Nobel Peace Prize Award – Indian Contestants, Shaker Publisher, Aachen 2016.
- 10) India's Nobel Prize Nominators and Nominees – The Praxis of Nomination and Geographical Distribution, Shaker Publisher, Aachen 2016.
- 11) Die Nobelpreise und die indische Elite, Shaker Verlag, Aachen 2016.
- 12) D.M. Bose – His scientific Work in International Context, Shaker Publisher, Aachen 2016.
- 13) Chemistry and Physics Nobel Prizes – India's Contribution, Shaker Publisher, Aachen 2016.
- 14) Mahatma Gandhi – Die Schattenseite - ..., Shaker Verlag, Aachen 2016.
- 15) Mahatma Gandhi für Lehrkräfte und Eltern – „Mahatma“ – ein normaler Menschen wie du und ich, Shaker Verlag, Aachen 2016.
- 16) Mahatma Gandhi – der verpasste Friedensnobelpreis, Shaker Verlag, Aachen 2017.
- 17) Bidhu Bhushan Ray – A Pioneer of X-ray Spectroscopy, Shaker Publisher, Aachen 2017.
- 18) Gandhi and the Nobel Peace Prize, Routledge Publisher, New York 2017.
- 19) (S.C. Roy, R. Singh), DM Bose - A Scientist Incognito, Bose Institute Press, Kolkata 2017.
- 20) C.V. Raman's Laboratory and Discovery of the Raman Effect, Shaker Verlag, Aachen 2018.
- 21) Gandhi and the Nobel Peace Prize, Manohar Publisher, New Delhi 2018.
- 22) (R. Singh, S.C. Roy), A Jewel Unearthed: Bibha Chowdhuri - The Story of an Indian Woman Scientist, Shaker Verlag, Aachen 2018.
- 23) C.V. Raman's Students – Sukumar Chandra Sirkar: Life and

- Science, Shaker Verlag, Aachen 2019.
- 24) Mahatma Gandhi für Anfänger - 100 Fragen und Antworten, Shaker Verlag, Aachen 2019.
 - 25) Einstein Rediscovered - Interactions with Indian Academics, Shaker Publisher, Düren 2019.
 - 26) (S.C. Roy, R. Singh), D.M. Bose - His Life, Science and Connection with Global Elites, Shaker Publisher, Düren 2019.
 - 27) C.V. Raman and the Press: Science Reporting and Image Building – Part I: Kolkata Period, Shaker Publisher, Dueren 2019.
 - 28) (R. Singh, S.C. Roy), Clay, Craft, Music and Science: Purnima Sinha's Life, Shaker Publisher, Dueren 2020.
 - 29) (R. Singh, S.C. Roy), Bibha Chowdhuri, eine indische Hochenergiephysikerin als „Star“ am Himmel, Shaker Publisher, Dueren 2020.
 - 30) Einstein und Indien - Wissenschaftliche und persönliche Verbindungen, Shaker Verlag, Düren 2020.
 - 31) C.V. Raman and the Press: Science Reporting and Image Building - Part II: The Indian Institute of Science Period, Shaker Publisher, Dueren 2020.
 - 32) C.V. Raman and the Press: Science Reporting and Image Building - Part III: The Raman Research Institute Period, Shaker Publisher, Dueren 2020.
 - 33) (R. Singh, S.C. Roy), A Jewel Unearthed: Bibha Chowdhuri - The Story of an Indian Woman Scientist, Shaker Publisher, Aachen 2018. Ebenezer Printing House, Mumbai 2020.
 - 34) (R. Singh, S.C. Roy), N.R. Sen – Life and Science, Shaker Publisher, Düren 2021.
 - 35) C.V. Raman's student Kedareshwar Banerjee – His life and science, Shaker Publisher, Düren 2021.
 - 36) (G. Gangopadhyay, A. Kundu, R. Singh), The Dazzling Dawn – Physics Department of Calcutta University (1916-36), Shaker Publisher, Düren 2021.
 - 37) Snehamoy Datta – His scientific work in international context, Shaker Publisher, Düren 2021.



Ms. Sujata Roy is an alumna of IIT Kharagpur and has spent most of her career in the Corporate IT sector, working with various private and multi-national organisations till she finally retired from IBM as General Manager. After retirement, she has been actively involved in IIT alumni activities and had been the President of IIT Kharagpur Alumni Association, Kolkata Chapter and the Vice President of IIT Kharagpur Alumni Foundation (India). She is a Distinguished Service Award (DSA) recipient from IIT Kharagpur.

Ms. Roy is currently the Chief Operating Officer of the National Digital Library of India project, IIT Kharagpur. She is an independent Director on the Board of WEBFIL Limited and is also the Chairperson of the Regional Chapter (East India), Wheels Global Foundation.

E-mail: Sujataibm@gmail.com