

Indian Journal's Special LENR Issue

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Access full papers from the Current Science special issue: <http://www.currentscience.ac.in/php/toc.php?vol=108&issue=04>

The February 25, 2015 (Vol. 108, #4) issue of the Indian journal *Current Science* features a special section on low-energy nuclear reactions (LENR, or cold fusion). The 170-page collection of 34 cold fusion review papers is co-edited by Dr. Mahadeva Srinivasan and Dr. Andrew Meulenberg, both cold fusion researchers in India.

Current Science, founded in 1932, is published twice monthly. It is a leading interdisciplinary science journal in India. One of the journal's main goals is to create a forum to "discuss issues and problems faced by science and scientists." The regularly occurring special sections allow topics to be presented fully. The journal prints and distributes 7,000 copies within India (and some internationally), but is available free of charge online: <http://www.currentscience.ac.in/>

Current Science editor Prof. R. Srinivasan, an Earth System Scientist at the Indian Institute of Science, made the bold, brave decision to produce the LENR special section after being approached by Dr. M. Srinivasan and Dr. Meulenberg in August 2014. Upon meeting Prof. R. Srinivasan, Dr. Meulenberg found someone with "an open mind who was willing to let us make a case." Prof. R. Srinivasan was aware of the ongoing work in the LENR field. His decision to consider the special section was based on his recognition of the potential of LENR. He noted, "I have been aware for decades of the problem of climate change and need for clean energy development. Need for clean energy is much more appreciated today than 25 to 30 years ago. LENR provides one of the approaches for clean energy generation."

At a regular monthly meeting of the *Current Science* Editorial Board, Prof. R. Srinivasan presented the list of potential contributors to the proposed special section on LENR. While the Board was impressed by the list of contributors, he said that, "The matter was discussed at length, especially on the lack of interest in this field by a large community of physicists, and finally a decision was made to bring out the special section." He noted that the present Editorial Board has no members who have worked in the LENR field, "But they consist of scientists who teach nuclear reactions in premier institutions in India. They are informed of the work going on in the field by reputable scientists. It is for this reason it was considered useful to have the special section guest edited by Dr. M. Srinivasan and Dr. Andrew Meulenberg, two scientists who have actually worked in this field and are passionate about it." One contributor, Dr. David Nagel of The George Washington University, said of the selection of the co-editors, "It is very appropriate that the leadership of the special section included an experienced experimentalist and a leading theoretician in the field."

Thirty of the papers (not including the Preface written by the guest editors and three papers on the history of cold fusion in selected countries) were peer-reviewed by an Indian

reviewer and scientists from the international LENR community. Rigorous reviews of papers submitted to *Current Science* is one of the strengths of the journal.

Prof. R. Srinivasan's perspective on LENR is rather nuanced: "I am aware that the field of cold fusion/LENR is not appreciated by a large community of physicists. In spite of the lack of adequate support, a large community of several hundred physicists have been pursuing the field, although on a subdued scale. The field has suffered from lack of interest by skeptics and inadequate support for research by people who have believed in its possibility. Either to prove or disprove this science, there is a need for research, both for development of theory and experimental verification." He noted that NASA's interest in LENR, MIT IAP courses on the topic and E-Cat research are all recent developments that encouraged him to "take the step to permit a special section on LENR in *Current Science*."

Prof. R. Srinivasan hopes that this special section on LENR will have a meaningful impact. He said, "What I hope to accomplish by the special section is to present the state of the art of this field and generate interest among scientists that there is a field which needs to be thoroughly tested and developed to meet the clean energy requirement. I believe that any scientific field should not be discredited without adequate verification." This last point is something that all of science should more adequately embrace. Prof. R. Srinivasan and the Editorial Board of *Current Science* should be applauded for their willingness to publish this controversial, potentially paradigm-shifting material.

Prof. R. Srinivasan noted, "Given the fact that the field of LENR has been gaining more attention in recent years as one of the alternative approaches to meet the clean energy needs of human kind, given the possibility that if this field succeeds it will contribute to reversing the anthropogenic input to climate change, we believe that there should be open-minded approach to this science."

Dr. M. Srinivasan and Dr. Meulenberg's aspiration is that the material presented in *Current Science* will have a broad impact worldwide, alerting scientists outside the field to the very good work being done. Some of their colleagues who contributed material to the issue have similar wishes. Dr. Michael McKubre, of SRI International, stated, "It is hard to know what the response will be in the broader Indian scientific community, or in the world, but the effect must be positive. I applaud this initiative and I very much hope that the results meet Dr. M. Srinivasan's expectation. He and Dr. Meulenberg have put a great deal of effort into this initiative. It looks like it has come together very nicely. They are both to be commended for effort and vision; Dr. M. Srinivasan doubly so for his early vision, committed tenacity, and love for and faith in the future of India."

Dr. Edmund Storms, retired from Los Alamos National Lab, noted, "For a major scientific journal to focus on such a controversial topic speaks well for the health of science in India...We all are grateful to Dr. M. Srinivasan for the effort to set India on a better path by arranging, with the help of Dr. Meulenberg, for a special issue of *Current Science* to discuss the Fleischmann-Pons phenomenon. Hopefully, for the sake of the entire world, this effort will be successful."

Dr. M. Srinivasan is optimistic that the special issue will "help create an environment which is very conducive for reigniting interest in this field in India." He has worked tirelessly over the years to get cold fusion research recognized and once again pursued in India. He and his boss, the late Dr. P.K. Iyengar, led the Bhabha Atomic Research Center (BARC) cold fusion efforts into the early 1990s, producing remarkable results. But, the Indian program ended after Iyengar moved on to serve as Chairman of the Indian Atomic Energy Commission and a new director took over at BARC who was influenced by the negative report released by the U.S. Department of Energy (ERAB Report).

Dr. Nagel noted, "While many countries are ignoring the challenges and promises of LENR, India is starting to assume

a leading role in the field. Much of the reason for interest in LENR within India is due to the activities of Dr. Mahadeva Srinivasan."

Dr. M. Srinivasan chaired ICCF16, the international cold fusion conference, in 2011 and worked diligently to get press coverage of the event (and the field). He is currently leading other efforts to move India back into cold fusion research.

Dr. Meulenberg, who is retired from COMSAT Labs and teaching, said of potential renewed Indian interest: "There are probably more scientists in India interested in, or at least open to, cold fusion than the total number of scientists in the U.S. If money were to be made available and a few more people with cold fusion backgrounds to act as guides could be brought in, then cold fusion in India would rapidly come to fruition." He spoke specifically about the seeming interest of student scientists: "When Dr. M. Srinivasan had the cold fusion workshop before ICCF16 in Chennai, the response among the students was such that, had cold fusion not been so strongly suppressed and funding and scholastic opportunity eliminated, I estimate that there would be 10,000 students in India alone working in the area...There are great minds in the students that I have met here. Unfortunately,

— Contents of *Current Science* Special Section on LENR —

- Preface (Mahadeva Srinivasan, Andrew Meulenberg)
- Cold Fusion: Comments on the State of Scientific Proof (Michael C.H. McKubre)
- Selective Resonant Tunnelling: Turn the Hydrogen-Storage Material into Energetic Material (C.L. Liang, Z.M. Dong, X.Z. Li)
- Highly Reproducible LENR Experiments Using Dual Laser Stimulation (Dennis Letts)
- Condensed Matter Nuclear Reaction Products Observed in Pd/D Co-deposition Experiments (P.A. Mosier-Boss, L.P. Forsley, F.E. Gordon, D. Letts, D. Cravens, M.H. Miles, M. Swartz, J. Dash, F. Tanzella, P. Hagelstein, M. McKubre, J. Bao)
- Use of CR-39 Detectors to Determine the Branching Ratio in Pd/D Co-deposition (P.A. Mosier-Boss, L.P.G. Forsley, A.S. Roussetski, A.G. Lipson, F. Tanzella, E.I. Saunin, M. McKubre, B. Earle, D. Zhou)
- Observation and Investigation of Anomalous X-ray and Thermal Effects of Cavitation (V.I. Vysotskii, A.A. Kornilova, A.O. Vasilenko)
- Transmutation Reactions Induced by Deuterium Permeation Through Nano-structured Palladium Multilayer Thin Film (Yasuhiro Iwamura, Takehiko Itoh, Shigenori Tsuruga)
- Biological Transmutations (Jean-Paul Biberian)
- Microbial Transmutation of Cs-137 and LENR in Growing Biological Systems (V.I. Vysotskii, A.A. Kornilova)
- Energy Gains from Lattice-enabled Nuclear Reactions (David J. Nagel)
- Summary Report: "Introduction to Cold Fusion"—IAP Course at the Massachusetts Institute of Technology, USA (Gayle Verner, Mitchell Swartz, Peter Hagelstein)
- Extensions to Physics: What Cold Fusion Teaches (A. Meulenberg)
- Phonon Models for Anomalies in Condensed Matter Nuclear Science (Peter L. Hagelstein, Irfan U. Chaudhary)
- Development Status of Condensed Cluster Fusion Theory (Akito Takahashi)
- Model of Low Energy Nuclear Reactions in a Solid Matrix with Defects (K.P. Sinha)
- Coherent Correlated States of Interacting Particles: The Possible Key to Paradoxes and Features of LENR (Vladimir I. Vysotskii, Mykhaylo V. Vysotskyy)
- How the Explanation of LENR Can be Made Consistent with Observed Behaviour and Natural Laws (Edmund Storms)
- Introduction to the Main Experimental Findings of the LENR Field (Edmund Storms)
- Sidney Kimmel Institute for Nuclear Renaissance (G.K. Hubler, A. El-Boher, O. Azizi, D. Pease, J.H. He, W. Isaacson, S. Gangopadhyay, V. Violante)
- Progress Towards Understanding Anomalous Heat Effect in Metal Deuterides (O. Azizi, A. El-Boher, J.H. He, G.K. Hubler, D. Pease, W. Isaacson, V. Violante, S. Gangopadhyay)
- Review of Materials Science for Studying the Fleischmann and Pons Effect (V. Violante, E. Castagna, S. Lecci, F. Sarto, M. Sansovini, A. Torre, A. La Gatta, R. Duncan, G. Hubler, A. El Boher, O. Azizi, D. Pease, D. Knies, M. McKubre)
- Directional X-ray and Gamma Emission in Experiments in Condensed Matter Nuclear Science (Peter L. Hagelstein)
- Martin Fleischmann Memorial Project Status Review (Mathieu Valat, Ryan Hunt, Bob Greenyer)
- Replicable Cold Fusion Experiment: Heat/Helium Ratio (Abd ul-Rahman Lomax)
- Observation of Radio Frequency Emissions from Electrochemical Loading Experiments (D.A. Kidwell, D.D. Dominguez, K.S. Grabowski, L.F. DeChiaro, Jr.)
- Brief Summary of Latest Experimental Results with Mass-flow Calorimetry System for Anomalous Heat Effect of Nano-composite Metals Under D(H)-gas Charging (A. Kitamura, A. Takahashi, R. Seto, Y. Fujita, A. Taniike, Y. Furuyama)
- Condensed Matter Nuclear Reactions with Metal Particles in Gases (Dennis Cravens, Mitchell Swartz, Brian Ahern)
- Dry, Preloaded NANOR®-type CF/LANR Components (Mitchell Swartz)
- Observation of Neutrons and Tritium in the Early BARC Cold Fusion Experiments (Mahadeva Srinivasan)
- Introduction to Isotopic Shifts and Transmutations Observed in LENR Experiments (Mahadeva Srinivasan)
- Lattice-Enabled Nuclear Reactions in the Nickel and Hydrogen Gas System (David J. Nagel)
- Status of Cold Fusion Research in Japan (Akira Kitamura)
- Condensed Matter Nuclear Science Research Status in China (Z.M. Dong, C.L. Liang, X.Z. Li)

there is also a strong interest in making money. As students, these minds can be focused on this task. The limitation will be getting professors with sufficient knowledge of cold fusion to know how to turn their research strengths and capabilities to support cold fusion development."

Many of the contributors to the special section also acknowledge India's particular place in the forthcoming race to move cold fusion forward. Dr. McKubre noted, "Of all countries in the world, India could benefit most from a cheap, safe, reliable primary energy source that is universally accessible. India is uniquely blessed with the two resources most needed to bring cold fusion to practical reality: skilled metallurgists and nuclear engineers."

Dr. Storms said, "For a country, such as India, to have a modern society, huge amounts of power are required. If this power were obtained from conventional sources, the air pollution being experienced by China and the radioactive contamination experienced by Russia and Japan can be the cost. Besides, addition of more CO₂ to the atmosphere would badly affect the rest of the world. India now has the option to avoid these problems by exploring and eventually applying the LENR energy source."

Dr. Nagel stated, "Consider the production of electricity by burning coal, which produces 60% of the electricity in India. The overall process involves three energy conversions, each with serious energy losses: (1) chemical to thermal, (2) thermal to mechanical, and (3) mechanical to electrical. Each step is also burdened by the thermodynamic Carnot inefficiency. The point is that the current production of electricity involves significant energy losses, in contrast to the energy gains already demonstrated by LENR. The high gains and high temperatures, which some LENR prototypes have exhibited, bode well for future electricity production in India and elsewhere. This section in *Current Science* could prove to be a tipping point for LENR in India. The high level of scientific expertise in the country, on top of the growing national need for energy, both position India to take the global lead in the field."

Prof. R. Srinivasan is hopeful that the LENR special section will live up to the goals of *Current Science* by generating dialogue between scientists. He stated, "I sincerely hope that

this special section on LENR will generate more reader feedback. We will be happy to publish healthy criticism and well-founded arguments and author's responses in correspondence columns." Dr. Meulenberg stated, "I hope that there will be open discussions and not dogmatic rejection or acceptance of the papers."

Aside from any long-term impact the *Current Science* collection might have, guest editors Dr. Meulenberg and Dr. M. Srinivasan are very satisfied with the final product. When asked if they felt that anything was missing from the overview provided by the materials in the collection, Dr. M. Srinivasan noted that he "would have liked to have a couple of papers addressed to young experimentalists who might like to get involved in LENR research, helping them select specific research topics in the field." Dr. Meulenberg said, "The project was initiated before the 'Hot-Cat' data was presented. So, unfortunately, detailed analysis of the E-Cat results is not in the special section. However, unless it were presented by the owners and authors of that work, it would not be in keeping with the intent of the cold fusion section."

Dr. M. Srinivasan has arranged for copies of the LENR special section of *Current Science* to be provided to registrants of ICCF19, which will take place in Padua, Italy in April. The complete contents of the special LENR section of *Current Science* are noted in the sidebar (p. 10). The link to Vol. 8, Issue 4 is:

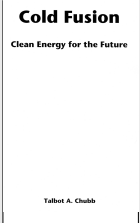
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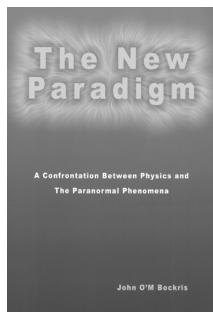
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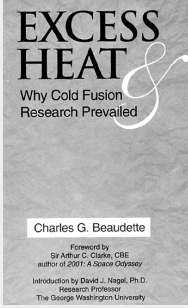
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