




CURRENT SCIENCE

Volume 108 Number 4

25 February 2015

470 In this issue**GUEST EDITORIAL**

- 471 The 'historic' storm at the Mumbai Science Congress**
Roddam Narasimha

CORRESPONDENCE

- 473 Early workings and modern science: some reactions to current happenings**, T. V. Ramakrishnan ■ **473 Good fences make good neighbours**, D. Balasubramanian ■ **474 The annual science farce**, P. Tauro and A. S. Rao ■ **474 The missing 'crown' of India**, K. L. Chaudhary

NEWS

- 476 Ayurvedic treatment and modern medicine**, P. L. T. Girija, G. S. Savithri, Rama Jayasundar, G. G. Gangadharan, N. Nagashayana and S. Yashonath ■ **479 Scholarly publishing**, Debosree Ghosh ■ **480 Strategic environmental assessment**, Jagdish Chandra Kuniyal, Sarla Shashni, Amit Kumar, Nidhi Kanwar, Bhim Chand, R. C. Sundriyal and Pitamber Prasad Dhyani

COMMENTARY

- 482 Controversies surrounding coumarin in cassia: the good, the bad and the not so ugly**
R. Dinesh, N. K. Leela, T. John Zachariah and M. Anandaraj

GENERAL ARTICLE

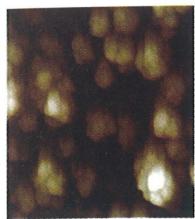
- 485 Groundwater depletion in Central Punjab: pattern, access and adaptations**
Satvir Kaur and Kamal Vatta

SPECIAL SECTION: LOW ENERGY NUCLEAR REACTIONS

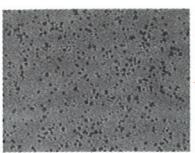
- 491 Preface**
M. Srinivasan and A. Meulenberg
- 495 Cold fusion: comments on the state of scientific proof**
Michael C. H. McKubre
- 499 Extensions to physics: what cold fusion teaches**
A. Meulenberg
- 507 Phonon models for anomalies in condensed matter nuclear science**
Peter L. Hagelstein and Irfan U. Chaudhary
- 514 Development status of condensed cluster fusion theory**
Akito Takahashi
- 516 Model of low energy nuclear reactions in a solid matrix with defects**
K. P. Sinha
- 519 Selective resonant tunnelling – turn the hydrogen-storage material into energetic material**
C. L. Liang, Z. M. Dong and X. Z. Li
- 524 Coherent correlated states of interacting particles – the possible key to paradoxes and features of LENR**
Vladimir I. Vysotskii and Mykhaylo V. Vysotskyy
- 531 How the explanation of LENR can be made consistent with observed behaviour and natural laws**
Edmund Storms
- 535 Introduction to the main experimental findings of the LENR field**
Edmund Storms



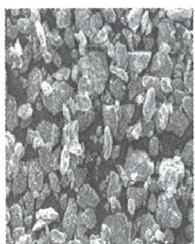
- ◀ 540 **Review of materials science for studying the Fleischmann and Pons effect**
V. Violante, E. Castagna, S. Lecci, F. Sarto, M. Sansovini, A. Torre, A. La Gatta, R. Duncan, G. Hubler, A. El Boher, O. Aziz, D. Pease, D. Knies and M. McKubre
- 559 **Highly reproducible LENR experiments using dual laser stimulation**
Dennis Letts



- ◀ 562 **Sidney Kimmel Institute for Nuclear Renaissance**
G. K. Hubler, A. El-Boher, O. Azizi, D. Pease, J. H. He, W. Isaacson, S. Gangopadhyay and V. Violante
- 565 **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 and S. Gangopadhyay



- 574 **Replicable cold fusion experiment: heat/helium ratio**
Abd ul-Rahman Lomax
- 578 **Observation of radio frequency emissions from electrochemical loading experiments**
D. A. Kidwell, D. D. Dominguez, K. S. Grabowski and L. F. DeChiaro Jr
- 582 **Condensed matter nuclear reactions with metal particles in gases**
Dennis Cravens, Mitchell R. Swartz and Brian Ahern
- 585 **Use of CR-39 detectors to determine the branching ratio in Pd/D co-deposition**
P. A. Mosier-Boss, L. P. Forsley, A. S. Roussetski, A. G. Lipson, F. Tanzella, E. I. Saunin, M. McKubre, B. Earle and D. Zhou



- 589 **Brief summary of latest experimental results with a 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 and Y. Furuyama
- 594 **Condensed matter nuclear science research status in China**
Z. M. Dong, C. L. Liang and X. Z. Li
- 595 **Dry, preloaded NANOR®-type CF/LANR components**
Mitchell R. Swartz, Gayle M. Verner, Jeffrey W. Tolleson and Peter L. Hagelstein



- 601 **Directional X-ray and gamma emission in experiments in condensed matter nuclear science**
Peter L. Hagelstein
- 608 **Observation and investigation of anomalous X-ray and thermal effects of cavitation**
V. I. Vysotskii, A. A. Kornilova and A. O. Vasilenko
- 614 **Martin Fleischmann Memorial Project status review**
Mathieu Valat, Ryan Hunt and Bob Greenyer



- 619 **Observation of neutrons and tritium in the early BARC cold fusion experiments**
Mahadeva Srinivasan
- 624 **Introduction to isotopic shifts and transmutations observed in LENR experiments**
Mahadeva Srinivasan
- 628 **Transmutation reactions induced by deuterium permeation through nano-structured palladium multilayer thin film**
Yasuhiro Iwamura, Takehiko Itoh and Shigenori Tsuruga
- 633 **Biological transmutations**
Jean-Paul Biberian
- 636 **Microbial transmutation of Cs-137 and LENR in growing biological systems**
V. I. Vysotskii and A. A. Kornilova
- 641 **Energy gains from lattice-enabled nuclear reactions**
David J. Nagel
- 646 **Lattice-enabled nuclear reactions in the nickel and hydrogen gas system**
David J. Nagel
- 653 **Summary report: 'Introduction to Cold Fusion' – IAP course at the Massachusetts Institute of Technology, USA**
Gayle Verner, Mitchell Swartz and Peter Hagelstein

- 655 Status of cold fusion research in Japan
Akira Kitamura
- 656 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 and J. Bao

REVIEW ARTICLE

- 660 Flyrock in surface mine blasting: understanding the basics to develop a predictive regime
Avtar K. Raina, V. M. S. R. Murthy and Abhay K. Soni

RESEARCH ARTICLES

- 666 Aerosol optical properties over marine and continental sites of India during pre-monsoon season
Piyush Patel and A. K. Shukla
- 677 Contribution of sewage treatment to pollution abatement of urban streams
Priyanka Jamwal, T. Md. Zuhail, Praveen Raje Urs, Veena Srinivasan and Sharachchandra Lele

RESEARCH COMMUNICATIONS

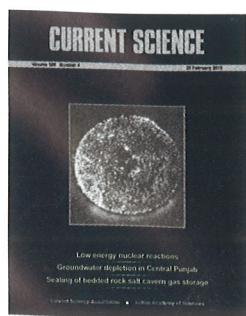
- 686 In silico prediction of *Escherichia coli* metabolic engineering capabilities for 1-butanol production
Bashir Sajo Mienda, Mohd Shahir Shamsir, Faezah Mohd Salleh and Rosli Md. Illias
- 694 Morphometric analysis of Barren volcanic base and associated tectonic elements in the Andaman fore-arc sub-basin
Saju Varghese and G. Nagendran
- 699 Comparative study of soil profiles developed on metavolcanic (basaltic) rocks in two different watersheds of Garhwal Himalaya
S. Vyshnavi, R. Islam and Y. P. Sundriyal
- 708 Anisotropy of magnetic susceptibility of earthquake-affected soft sediments: example from Ther village, Latur, Maharashtra, India
B. V. Lakshmi, K. V. V. Satyanarayana, N. Basavaiah and Praveen Gawali
- 713 Geochemistry of the unusual mafic intrusions in Betul Fold Belt, Central India: implications for Ni–Cu–Au–PGE metallogeny
D. V. Subba Rao, M. Satyanarayanan, D. Srinivasa Sarma, K. S. V. Subramanyam, K. Venkateswarlu and M. Hanuma Prasad
- 723 Equivalent permeability model for sealing evaluation of natural gas storage cavern in bedded rock salt
Tongtao Wang, Chunhe Yang, Xiangzhen Yan, Hongling Ma, Xilin Shi and J. J. K. Daemen

BOOK REVIEWS

- 730 Know Your Heart – The Hidden Links Between Your Body and the Politics of the State by Dinesh C. Sharma, reviewed by V. Raman Kutty ■ 731 A Petrographic Atlas of an Ophiolite: An Example from the Eastern India–Asia Collision Zone by Naresh Chandra Ghose, Nilanjan Chatterjee and Fareeduddin, reviewed by Rajkumar Ghosh

PERSONAL NEWS

- 732 Vasant R. Gowariker (1933–2015), Rajaram Nagappa
- 734 Publications received – 2014



◀ COVER. Autoradiograph of Ti anode of a plasma focus device after several discharge shots. See page 619.

Indexed in CURRENT CONTENTS/GEOBASE/CHEMICAL ABSTRACTS/IndMED/SCOPUS/
WEB OF SCIENCE