

Workshop on 150 years of the Periodic Table of Elements

November 3, 2018, 11 am to 6 pm

Marathi Bhasha Bhavan Auditorium, University of Mumbai

Convenor: Prof. V.A. Bambole

Co-Convenor: Prof. M. Hemalatha

The workshop on 150 years of the Periodic Table of Elements was organized by the Department of Physics, University of Mumbai, along with the UGC-Special Assistance Programme on November 3, 2018.

All of you may be aware that the United Nations has designated the year 2019 as the International Year of the Periodic Table of Chemical Elements. The development of the Periodic Table of the Elements is one of the most significant achievements in science and a uniting scientific concept, with broad implications in Physics, Chemistry, Biology and other natural sciences. The International Year of the Periodic Table of Chemical Elements in 2019 coincides with the 150th anniversary of the discovery of the Periodic System by Dmitry Mendeleev in 1869. It is a unique tool enabling scientists to predict the appearance and properties of matter on Earth and in the Universe. Many chemical elements are crucial to enhance the value and performance of products necessary for humankind, our planet, and industrial endeavors. The four most recent elements (113, 115, 117 and 118) were recently fully added into the Periodic Table, with the approval of their names and symbols. The International Year of the Periodic Table of the Chemical Elements also coincides with the Centenary of IUPAC (IUPAC100). These events will enhance the understanding and appreciation of the Periodic Table among the public.

The Chief Guest of the Workshop was Prof. Dhiren Patel, Director, Veermata Jijabai Technological Institute.

The following were the invited speakers at the workshop:

Prof. S.N. Mishra from Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research, Mumbai.

Dr. B.S. Tomar, Former Director Radiochemistry and isotope Group, Bhabha Atomic Research Centre, Mumbai.

Dr. D.C. Biswas, Head, Fission Physics Section, Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai.

Prof. S.S. Prabhu, Department of Condensed Matter Physics and Material Science, Tata Institute of Fundamental Research, Mumbai.

There were about 200 participants for the workshop. The workshop was attended by Faculty and students of Department of Physics and Chemistry. The faculty and students from colleges and other institutes in Mumbai also attended the workshop in large numbers.

There was a poster session by research students of Department and other students who had prepared their research work with interest and enthusiasm.





























Local magnetism of Fe in SrFe_2As_2 by ^{54}Fe PA

▶ $T > 200 \text{ K}$ Observation of Curie-Weiss type local susceptibility \rightarrow large local moment $\sim 1 \mu_B/\text{Fe}$ in tetragonal phase.

▶ **Below 200 K**

▶ Sharp rise of hyperfine field
– power law dependence

▶ $B_{\text{hf}}(T) = B_{\text{hf}}(0)(1-T/T_N)^\alpha$

▶ Critical exponent $\alpha = 0.21$
 $\alpha = 0.12$ for 2D and, $1/3$ for 3D systems

▶ \rightarrow quasi-two-dimensional

\rightarrow Canting of Fe moment















Role of shell structure in Nuclear Physics

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Mumbai University, November, 03, 2018

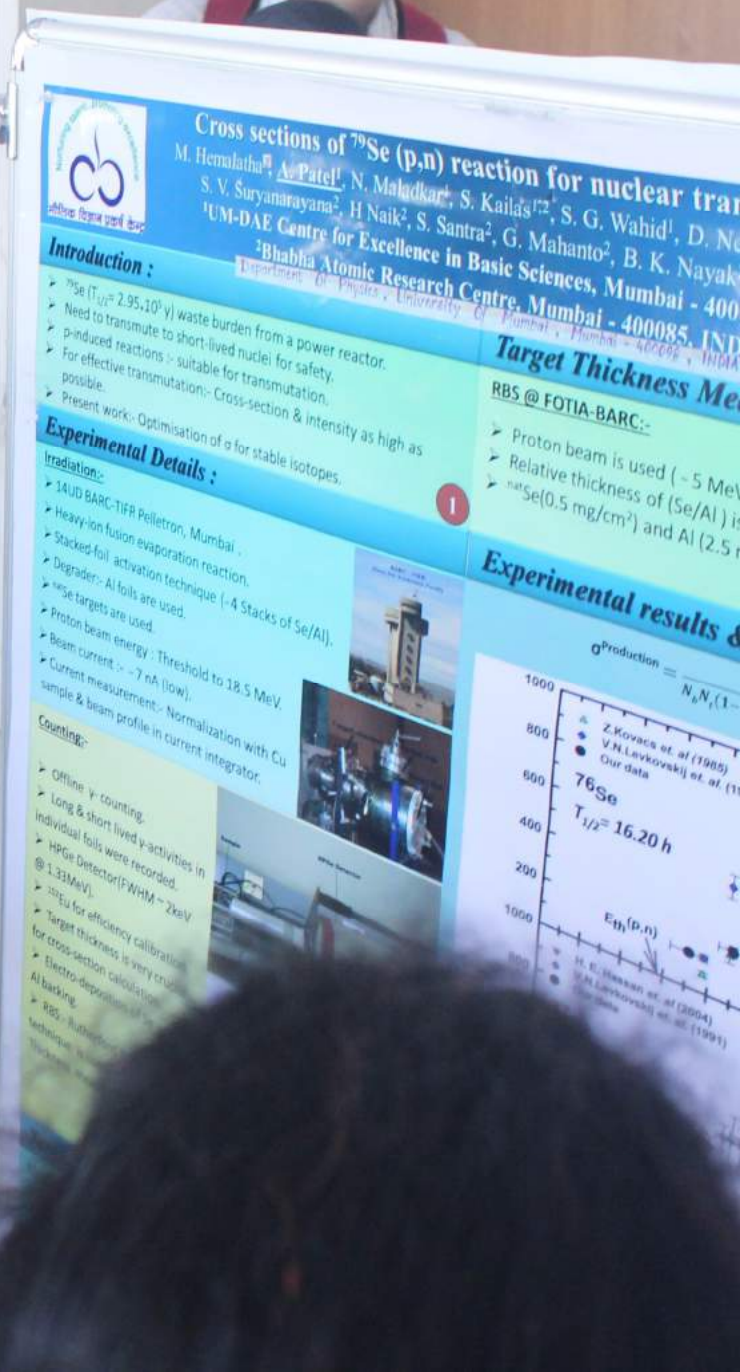








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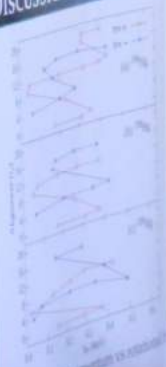


en Hg Isotopes

Chowdhury², R.V.F. Janssens³, M.P. Carpenter¹,
ter^{2,3}, D. Seweryniak³, S. Zhu²
University of Massachusetts Lowell, ³Argonne National Laboratory



DISCUSSION



- Successive increases in aligned angular momentum
- Signature of high-spin states
- 3- and 4-quasiparticle configurations
- Proposed for coupled states in 198Hg

Proposed Level Structure for ¹⁹⁸Hg and ²⁰⁰Hg







