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## EDITORIAL

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Dear reader, with great pleasure we provide you with the second issue of Atom Indonesia in 2017, namely Volume 43, No.2 (2017). In this issue, we proudly announce a piece of very good news that Atom Indonesia has been approved to be indexed by SCOPUS starting May 2017. Besides indexed by Scopus, Atom Indonesia has also been indexed by Google Scholar, DOAJ, Crossref, ISJD, and IAEA INIS. By this indexing, it is expected that Atom Indonesia become better known among the researchers from around the world and easier to access, thus also increasing the impact factor of the journal.

Another important piece of news is that Atom Indonesia has been reaccredited by the Ministry of Research, Technology and Higher Education with the number of 36b/E/KPT/2016, with the highest mark (A) and also by Indonesian Institute of Science (LIPI) with the highest rank (A) category. Additionally, Atom Indonesia has provided the Digital Object Identifier (DOI) for each article accepted, so that it can be linked to Crossref. Further information on, and the full articles of, Atom Indonesia Vol.43 No.2 (2017) can be downloaded from <http://ajj.batan.go.id>.

We are glad to inform you that, starting this year, the number of articles per issue has been increased from the previous seven to eight. The Atom Indonesia Vol. 43 No.2 (2017) contains eight articles discussing various applications of nuclear science and technology, such as the use of software package based on GNU C++ programming language for restoring a spectrometer's functionality, RIA analysis of unprotected TRIGA reactor, assessment of partial body exposures using micronucleus assay by estimating the partial body dose and fraction of irradiated blood, optimization of ion source head position in the central region of DECY-13 cyclotron, monitoring and analysis of environmental gamma dose rate around the Serpong nuclear complex, determination of reactivity and neutron flux using modified neural network for HTGR, field performance of five soybean mutants under drought stress conditions and molecular analysis using SSR markers, and simulation of spray injection in a nuclear power plant's pressurizer using RELAP5.

"Development of Data Acquisition and Measurement Software for Neutron Triple Axis Spectrometer at BATAN-Serpong, Indonesia" was explored by Bharoto, Sairun, A. Ramadhani, and I. Sumirat from Center for Science and Technology of Advanced Materials, National Nuclear Energy Agency. The Neutron Scattering Laboratory at the National Nuclear Energy Agency of Indonesia (BATAN) possesses several neutron beam instruments for materials science research. One of the instruments is a neutron triple-axis spectrometer (TAS). Due to the malfunction of the main computer, the original main control system had to be replaced with a new one. For this reason, a new data acquisition and measurement software program based on GNU C++ programming language was developed for restoring the spectrometer's functionality.

"RIA Analysis of Unprotected TRIGA Reactor" was written by M.H. Altaf and N.H. Badrun from the Reactor Physics and Engineering Division (RPED), Institute of Nuclear Science and Technology (INST), Atomic Energy Research Establishment (AERE), Dhaka, Bangladesh under collaboration with S.M. Tazul Islam from Department of Physics, Government BM College, Barisal, Bangladesh. An RIA (reactivity initiated accident) analysis has been carried out for the TRIGA Mark II research reactor considering both step and ramp reactivity ranges within 0.5 % dk/k (< \$1) to 2.0 % dk/k (>\$2). The insertion time was set at 10 s. Based on the fact that a reactor becomes unprotected if scram does not work at the event of danger, to define unprotected conditions, the time to actuate scram (trip) was taken as close to total simulation time.

"Biological Dosimetry Using Micronucleus Assay in Simulated Partial-Body Exposure to Ionizing Radiation" was explored by S. Purnami, S. Nurhayati, M. Syaifudin, and D. Ramadhani from Center for Radiation Safety Technology and Metrology, National Nuclear Energy Agency. In radiation accidents, it is common that only several parts of the body are exposed to radiation. As a consequence, there is a mixture of exposed and unexposed lymphocytes in peripheral blood cells of the samples. This phenomenon will cause the dose value estimated using the exposed lymphocytes to be lower than the actual dose. In this study, an assessment of partial body exposures using micronucleus assay by estimating the partial body dose and fraction of irradiated blood was conducted.

“Optimization of Ion Source Head Position in the Central Region of DECY-13 Cyclotron” was written by Silakhuudin and I.A. Kudus from Center for Accelerator Science and Technology, National Nuclear Energy Agency. Optimization of the ion source head position of the central region of DECY-13 cyclotron has been carried out based on simulation process using a particle tracking program written in Scilab 5.2.1. The simulated particle was the H<sup>+</sup> ion that was accelerated in the DECY-13 cyclotron.

“Monitoring and Analysis of Environmental Gamma Dose Rate around Serpong Nuclear Complex” was explored by I.P. Susila and A. Yuniarto from Center for Nuclear Facilities Engineering, National Nuclear Energy Agency, collaborating with C. Cahyana from Center for Informatics and Nuclear Strategic Zone Utilization, National Nuclear Energy Agency. An environmental radiation monitoring system that continuously measures gamma dose rate around nuclear facilities is an important tool to present dose rate information to the public or authorities for radiological protection during both normal operation and radiological accidents. We have developed such a system that consists of six GM-based device for monitoring the environmental dose rate around Serpong Nuclear Complex.

“Determination of Reactivity and Neutron Flux Using Modified Neural Network for HTGR” is an interesting article resulting from a collaborative work between M. Subekti from Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency, K. Kudo from Kyushu University, Japan, K. Nabeshima and K. Takamatsu from Research Group for Advanced Reactor System, and Department of HTTR Project, Japan Atomic Energy Agency, Japan, respectively. Nuclear kinetic calculations based on point kinetic model have been generally applied as the standard method for neutronics codes. As the central control rod withdrawal test has demonstrated in a prismatic core type high-temperature gas-cooled reactor (HTGR) named High Temperature Engineering Test Reactor (HTTR), the transient calculation of kinetic parameter, reactivity, and neutron fluxes requires a new method to shorten calculation-process duration.

“Field Performance of Five Soybean Mutants under Drought Stress Conditions and Molecular Analysis Using SSR Markers” was jointly investigated by Yuliasti from Center for Isotopes and Radiation Application, National Nuclear Energy Agency, and Reflinur from Indonesian Center for Agricultural Biotechnology and Genetic Resource Research and Development, Bogor, Indonesia. The objectives of this research were to evaluate (1) the performance of soybean mutant lines under drought stress conditions, and (2) the genetic diversity and relationship among the mutant lines using SSR markers. The field evaluation was conducted during the dry season of 2011 and 2012 at the experimental farm of Mataram University, Indonesia. The field experiment was set up in a randomized block design. Ten mutant lines and two control varieties were evaluated in four replications. Genetic distance among evaluated lines were determined based on allelic diversity analysis using 40 simple sequence repeat (SSR) loci.

“Simulation of Spray Injection in the Pressurizer Using RELAP5” is an interesting article written by S. Dibyo and Susyadi from Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency. A modeling research using RELAP5 to assess the pressurizer of a pressurized water reactor (PWR) power plant has been performed. The heater and water injection systems in the pressurizer system of the PWR are of great importance for system pressure control. The heater is designed to increase the pressure while the water sprayer injection is to perform depressurization.

On behalf Chief Editor of Atom Indonesia, I would like to thanks to all of you for endless supports. This outstanding achievement could not be reached without great efforts and cooperation from the Editors, Reviewers, Managements, Authors and the Readers.

Editor in Chief