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Dear reader, with great pleasure we provide you with the third issue of Atom Indonesia in 2016, namely Volume 42, No. 3 (2016). The number of articles submitted to Atom Indonesia has significantly increased for the past few years. Therefore, only the articles that fulfill our requirements and qualifications will become our priority. Atom Indonesia has been trying to improve its services by keeping publication timeline on time and also by providing articles in press by using the Digital Object Identifier (DOI) for each article.

As previously mentioned, Atom Indonesia has 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. It would also increase the impact factor of the journal. Indonesian Institute of Science (LIPI) has approved our journal as one of the international reputed journals, besides reaccrediting it in the A category. Another important 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). This information can be found in the Atom Indonesia website, <http://aij.batan.go.id>. A further target of our journal is to be indexed by Scopus. Therefore, we have submitted the application to Scopus at the end of November 2015. Presently, this journal is under review by Scopus.

The Atom Indonesia Vol. 42 No. 3 (2016) contains seven articles discussing various applications of nuclear science and technology, such as nuclear power plant monitoring and control, development and characterization of nuclear fuels, radiation application in medical diagnostics, characterization and production of radiopharmaceuticals, and analysis of environmental radiation contamination on organisms.

“Preliminary Values of Diagnostic Reference Level for Selected X-Ray Examinations in Indonesia” was explored by E. Hiswara and his colleagues from Center for Radiation Safety Technology and Metrology, National Nuclear Energy Agency. The diagnostic reference levels form an efficient, concise, and powerful standard for optimizing the radiation protection of a patient. With an aim to contribute toward the establishment of the Indonesian National Diagnostic Reference Levels (NDRLs), a nationwide survey of the entrance surface doses received by adult patients during the most typical X-ray examinations has been performed. A number of 44 hospitals in 21 cities located in Java, Bali, Sumatera, Kalimantan, and Sulawesi islands were selected randomly to participate in this survey. Eight most common adult X-ray examinations in 13 projections, as well as four children X-ray examinations in six projections, were included in the list of procedures under consideration.

“An Online Non-Invasive Condition Monitoring Method for Stepping Motor CRDM in HTGR” was investigated by S. Bakhri and N. Ertugrul. It represents a collaborative work between National Nuclear Energy Agency and the School of Electrical & Electronic Engineering, University of Adelaide, Australia. The control rod drive mechanism (CRDM) based on stepping motor is one of the components applied in high-temperature gas-cooled reactors (HTGRs) to control the reactivity as well as to maintain the safety of reactor. The stepping motor requires a unique condition monitoring to avoid any failures especially due to the specific environments of CRDMs in the HTGR such as the allowable limits of high temperature and high radiation, as well as the location of a stepper motor inside a pressure shell. The online condition monitoring is carried out by direct pattern matching of the output signals of logic generator block and the output signals of motor driver. The online method utilizes signature patterns of voltage and stator current signals of the healthy motor as a baseline for healthy motor.

“Development of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ Generator System for Production of Medical Radionuclide $^{99\text{m}}\text{Tc}$ using a Neutron-activated ^{99}Mo and Zirconium Based Material (ZBM) as its Adsorbent” was written by I. Saptiama and colleagues from Center for Radioisotope and Radiopharmaceutical Technology, National Nuclear Energy Agency, and A. Mutalib from the Faculty of Mathematics and Natural Science, Padjadjaran University, Sumedang, Indonesia. Molybdenum produced from fission of ^{235}U is the most desirable precursor for $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ generator system as it is not carrier added and has high specific activity. This report deals with development of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ generator system where zirconium-based material (ZBM) is used as adsorbent of neutron-activated ^{99}Mo . The system was prepared by firstly irradiating natural Mo in the G.A. Siwabessy reactor to produce neutron-activated ^{99}Mo . The target was dissolved in NaOH 4 N and then neutralized with 12 M HCl.

“Neutronic and Thermal-Hydraulic Safety Analysis for the Optimization of the Uranium Foil Target in the RSG-GAS Reactor”, is an interesting article written jointly by S. Pinem and T.M. Sembiring from Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency, and P.H. Liem from the Nippon Advanced Information Service (NAIS Co. Inc.), Tokaimura, Ibaraki, Japan. The G.A. Siwabessy Multipurpose Reactor (Reaktor Serba Guna G.A. Siwabessy, RSG-GAS) has an average thermal neutron flux of 2×10^{14} neutron/(cm^2 sec) at the nominal power of 30 MW. The calculation results show that the optimum LEU foil target is 54 g corresponding to the reactivity change of less than the limit value of 500 pcm. From the safety analysis for the case when the primary flow rate decreased by 15% from its nominal value, it was found that the peak temperatures of the coolant and cladding are 69.5°C and 127.9°C , respectively, as described in this paper.

“Temperature and Salinity Effects on Bioaccumulation, Gill Structure, and Radiation Dose Estimation in the Milkfish *Chanos chanos* Exposed to ^{137}Cs ” was written by W.R. Prihatiningsih, H. Suseno, N.P. Zamani, and D. Soedharma. It is a collaborative work between the Department of Marine Science and Technology, Bogor Agricultural University, Bogor, Indonesia, and the National Nuclear Energy Agency, Indonesia. The present trend of global warming has led to an increase in seawater temperature and salinity. The effects of increasing salinity and temperature on the accumulation of ^{137}Cs by milkfish *Chanos chanos* was studied under laboratory conditions to obtain information on *Chanos chanos* adaptability under environmental changes. This study links radionuclide bioaccumulation data and monitoring data obtained in the field and laboratory experiment with radiation dose determined by ERICA Tools, an approach that will enable better linkages to be made between exposure and dose in *Chanos chanos* and its marine food web.

R. Sigit, H. Suwarno, and B. Soegijono showed their results on “Characterization of Zircaloy-4 after Gaseous Hydriding at the Temperature Range of $350\text{-}600^\circ\text{C}$ ”. It represents a collaborative work between the Department of Physics, Faculty of Mathematics and Science, University of Indonesia and National Nuclear Energy Agency, Indonesia. The degradation of the mechanical properties of zircaloy-4 as nuclear fuel cladding is inevitable due to its interaction with hydrogen during normal reactor operation. This experiment observed the occurrence of hydride phases after gaseous hydriding with hydrogen at elevated temperature, and their effects were evaluated based on the material's microstructure and mechanical properties. The results from optical microscope and scanning electron microscope confirmed the presence of hydrides at the specimens, identified by the growth of needle-like structure at those temperatures.

The “Uptake and Cytotoxicity Characterization of Radioiodine in MCF-7 and SKBR3 Breast Cancer Cell Lines” was explored by A. Elliyanti, *et al.* It is a collaborative work involving Medical Physics/Radiology Department of Faculty of Medicine, Andalas University, Dr. M. Djamil Hospital, Department of Nuclear Medicine and Department of Biochemistry, Padjadjaran University, Bandung, and National Nuclear Energy Agency of Indonesia. Radioiodine is an effective and low-risk therapy modality in well-differentiated thyroid cancer patients post near-total thyroidectomy. Extra thyroidal tumors such as breast cancer are known to be able to uptake radioiodine. The aim of this study was to analyze the uptake, efflux and cytotoxicity of radioiodine for two molecular types of breast cancer cell lines. These findings

could potentially lead to the use of I-131 for ablative therapy in breast cancer, similar to its use in the treatment of thyroid cancer.

We are glad to inform you, that the 8th Atom Indonesia Best Paper Awards (AIBPA) have been successfully conducted. The number of articles submitted for the competition has significantly increased this year to 55 papers. Finally, the referees have agreed to choose the best five winners among them. The first winner entitled “A Novel Method for ^{57}Ni and ^{57}Co Production using Cyclotron-Generated Secondary Neutrons” was written by H. Suryanto and I. Kambali from Center for Radioisotope and Radiopharmaceutical Technology (PTRR), National Nuclear Energy Agency, Serpong, Indonesia. The second and third place were “Micronucleus Frequencies and DNA Repair Gene XRCC3 Polymorphism in Radiation Workers of Center for Multi Purpose Reactor (PRSG), BATAN” and “Technetium-99m Labeled Diethyl Carbamazepine Citrate ($^{99\text{m}}\text{Tc-DEC}$) as a New Diagnostic Agent for Lymphatic Filariasis Detection in Nuclear Medicine”, respectively. The following articles, “An Experimental Analysis on Nusselt Number of Natural Circulation Flow in Transient Condition Based on the Height Differences between Heater and Cooler” and “The Analysis of Hierarchical Structure of Mesoporous Silica in Nanometer Scale by Small Angle Scattering Method”, were the fourth and fifth place. The AIBPA prize was awarded to the winners by Head of Batan at the 58th anniversary BATAN Serpong, Indonesia, December 5, 2016.

Further information on AIBA 2016, and the full articles of, Atom Indonesia Vol. 42 No.3 (2016) can be downloaded from <http://aij.batan.go.id>.

Editor in Chief