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Dear reader, with great pleasure we provide you with the first issue of Atom Indonesia in 2016, namely Volume 42, No.1 (2016). With a professional administration team and qualified editors and reviewers, Atom Indonesia received twice as many articles, from various authors and different topics related to nuclear science and technology, as it did in the previous year. Therefore, it is believed that the quality of our journal has improved significantly. Atom Indonesia improves its services to authors by keeping the publication timeline on time and also by providing the articles in press by using the Digital Object Identifier (DOI), as you can download in our website <http://aij.batan.go.id>.

As previously mentioned, Atom Indonesia has been indexed by Google Scholar, DOAJ, CROSS REF, ISJD, and IAEA INIS. By this indexing, it is expected that Atom Indonesia becomes better known among researchers from around the world and easier to access. For this reason, Indonesian Institute of Science (LIPI) has approved our journal as one of the international-reputed journals. This information can be found on 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. This journal is presently under review.

The Atom Indonesia Vol. 42 No.1 (2016) contains seven articles discussing various applications of nuclear science and technology, such as computational methods of radionuclides in cyclotron, materials, radiopharmaceutical applications for nuclear medicine, water radiolysis, and dryland remediation and agriculture. The contributors of those articles came not only from various national institutions and universities, but also from international institutions.

“Identification and Angular Distribution of Residual Radionuclides Detected on the Wall of BATAN’s Cyclotron Cave” was written by I. Kambali, *et al.*, from the Center for Radioisotopes and Radiopharmaceutical Technology, National Nuclear Energy Agency, Indonesia. Kambali *et al.* explained that the detection and measurement of radiation sources around BATAN’s cyclotron facilities in Serpong are required as an early step to avoid radiation impacts on the radiation employees who work with the cyclotron. In this paper, radiations emitted from the wall of the CS-30 cyclotron cave are detected and measured using an NaI(Tl) detector coupled with MCA. The experimental results indicate that Co-60 and Cs-134 detected on the cyclotron cave wall are the major radionuclides that contribute to the emitted gamma radiation. However, the maximum exposure measured on the wall surface was much lower than the permissible occupational exposure for radiation workers and general public.

“The Effect of Pretreatment by using Electron Beam Irradiation on Oil Palm Empty Fruit Bunch” was written by A. Kristiani, *et al.*, from the Research Center for Chemistry, Indonesian Institute of Sciences, Indonesia. Oil palm empty fruit bunch (OPEFB) is a potential type of lignocellulosic biomass for second-generation bioethanol production. This research aimed to study the effects of pretreatment process by using electron beam irradiation to the characterization of OPEFB as a raw material for the hydrolysis reaction to produce monomer sugars which will be fermented into ethanol. It was found that the crystallite sizes of treated OPEFBs are not significantly different from the untreated, except for the 200-kGy irradiated OPEFB. Irradiation pretreatment also increases specific surface area, pore volume, and pore size. The IR spectra analysis showed the absorption of cellulose, hemicellulose, and lignin.

Another article on “Temperature Dependence of the Primary Species Yields of Liquid Water Radiolysis by 0.8-MeV Fast Neutrons” was written by S.L. Butarbutar and G. R. Sunaryo from the Center for Reactor Technology and Nuclear Safety, National Nuclear Energy Agency, and their colleagues J. Meesungnoen and J. P. Jay-Gerin from Département de médecine nucléaire et de radiobiologie, Faculté de médecine et des sciences de la santé, Université de Sherbrooke, Québec, Canada. They explained that the yields of species such as hydrated electrons ( $e^-_{aq}$ ),  $H\cdot$ ,  $\cdot OH$ ,  $H_2$ , and  $H_2O_2$ , formed from the radiolysis of neutral liquid water by the incidence of 0.8-MeV neutrons at temperatures between 25 and 350°C, were calculated by using Monte Carlo simulations. The slowing down of these neutrons through elastic scattering produced elastic recoil protons with kinetic energies of ~0.5057, 0.186, and 0.0684 MeV that have linear energy transfers (LETs) of ~40, 67 and 76 keV/ $\mu m$ , respectively, at 25°C. Over the range of temperatures studied, the computed yields for 0.8-MeV fast neutron radiation show essentially similar temperature dependences with 2-MeV fast neutron and low-LET radiation, but with lower free radical yields and higher molecular yields.

“The Utilization of Microbial Inoculants Based on Irradiated Compost in Dryland Remediation to Increase The Growth of King Grass and Maize” had been explored by T. R. D. Larasati, N. Mulyana, and D. Sudradjat from the Center for Isotopes and Radiation Application, National Nuclear Energy Agency, Indonesia. This research was conducted to evaluate the capability of functional microbial inoculants to remediate drylands. A compost-based carrier was sterilized by a gamma irradiation dose of 25 kGy to prepare seed inoculants. The irradiated-compost-based hydrocarbon-degrading microbial inoculants and king grass (*Pennisetum purpureum* Schumach.) were used to remediate oil-sludge-contaminated soil using in-situ composting for 60 days. The results indicate that irradiated-compost-based microbial inoculants are suitable for remediating a dryland and therefore increase potential resources and improve the quality of the environment.

“Profile of MIBI Liquid Phase Radiopharmaceutical for Myocardial Imaging” had been studied by I. Daruwati, M. E. Sriyani, and N. K. Oekar from the Center for Applied Nuclear Science and Technology, National Nuclear Energy Agency, Indonesia, together with A. Hanafiah and N. Zainuddin from Indonesian College of Pharmacy (STFI), Indonesia. The  $^{99m}Tc$ -MIBI radiopharmaceutical has been used in nuclear medicine in Indonesia for myocardial imaging. The authors asserted that BATAN's researchers had mastered the technology to manufacture MIBI as a lyophilized kit. However, the manufacturing of liquid-phase kit did not involve lyophilization. The purposes of this study were to determine the stability of two different formulations of MIBI as a liquid-phase kit, to compare their stability in different storage condition, and to compare the ratio of activities attained in animal model.

I. Kurnia *et al.* from the Center for Radiation Safety Technology and Metrology, National Nuclear Energy Agency, in collaboration with B. Siregar *et al.* from Cipto Mangunkusumo Hospital, Jakarta, and T. Kutjana *et al.* from Hasan Sadikin Hospital, Bandung, Indonesia, have observed “The Relationship between Expression of p70s6k with Radiotherapy Response in Cervical Cancer”. The research was conducted due to the many important prognostic factors in advanced stage cervical cancer primary treated with radiotherapy. The p70s6k is a biomarker which plays a significant role in cell proliferation. In the present study, the relationship between the expression level of p70s6k before treatment and the radiotherapy response in cervical cancer was determined.

“Identification of the Second Mutation of BADH2 Gene Derived from Rice Mutant Lines Induced by Gamma Rays” was written by I. Ishak from the Center for Isotopes and Radiation Application, National Nuclear Energy Agency. The BADH2 gene acts as suppressor of 2-acetyl-1-pyrroline (2AP) biosynthesis in

plants. The 2AP is the volatile compound which provides fragrance in rice. In this experiment, aromatic mutant rice lines derived from irradiation of the Sintanur cultivar by gamma rays with a dose of 100 Gy were studied in molecular level. The results from both DNA sequences (from cv. Sintanur and AR.1020) derived from fragments at 254 bp show that point mutations occurred within exon 7 and earlier stop codon occurred in the AR.1020 mutant rice line.

Further information on, and the full articles of, Atom Indonesia Vol.42 No.1 (2016) can be downloaded from <http://aij.batan.go.id>.

Editor in Chief