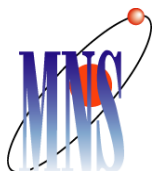

*JOURNAL of NUCLEAR
and Related
TECHNOLOGIES*



Volume 16, No.2, December 2019.

© 2019 by the Malaysian Nuclear Society

MESSAGE FROM CHIEF EDITOR

Dear readers and contributors,

First of all, I am pleased to have this opportunity to communicate to all of you through this second issue of the Journal of Nuclear and Related Technologies (JNRT) Volume 16, No. 2, December 2019. I would like to thank and congratulate to all of our contributors from various parts of the world who took part in this second issue of our journal with the common interest to enhance the knowledge in nuclear and related field. Secondly, on behalf of the Malaysian Nuclear Society (MNS) and JNRT Editorial Board, I would like to extend our invitation to all researchers and scientists, regardless where you are, to continuously support the effort of developing and promoting nuclear and related field for the benefit of all mankind. We all know that this field has contributed many good things to our lives and will continue to do so if we are actively involved in research and development.

In this issue, the topics cover radiation processing, natural radio nuclides measurement, reactor engineering and simulation, environmental and materials development. The papers were peer reviewed and had satisfied the referee's requirement. We believe that by following an international standard, we could maintain the quality and integrity of this journal.

Finally, I would like once again to extend my invitation to all scientists and researchers in this field to publish their works in JNRT. This is a biannual publication of MNS and we do accept subscription from outside Malaysia from those who are interested. My hope is that our effort to benefit the society at large.

Chief Editor

JNRT

The opinion expressed, and result presented in this publication are those of the authors, and do not represent the views of the JNRT, its committee or its officer except where explicitly identified as such. All right reserved. Apart from any fair dealing for the purposes of research or private study, no part of this publication may be produced, stored in a retrieval system or transmitted in any form or by any means without the prior permission in writing of the JNRT Chief Editor. Single copies may be made for the purposes of research or private study. Multiple copying of the content of this publication without permission is always illegal.

JOURNAL of NUCLEAR and Related TECHNOLOGIES

Vol. 16, No. 2, December 2019

(ISSN 1823-0180)

PATRON

Nahrul Khair Alang Md Rashid, Ph.D, Universiti
Teknologi Malaysia

ADVISOR

Abdul Aziz Mohamed, Ph.D, Universiti Tenaga
Nasional

MANAGING EDITORS

Chief Editor:

Faizal Mohamed, Ph.D, Universiti Kebangsaan
Malaysia

Deputy Chief Editor

Mohd Syukri Yahya, Ph.D, Universiti Tenaga
Nasional

Editors

Abu Bakar Hassan, Ph.D, Universiti Sains Islam
Malaysia

Nasri A. Hamid, Ph.D, Univerisiti Tenaga Nasional

Abu Hassan Husin, Ph.D, Univerisiti Teknologi
MARA

Khaidzir Hamzah, Ph.D, Universiti Teknologi
Malaysia

Irman Abdul Rahman, Universiti Kebangsaan
Malaysia

Faridah Mohamad Idris, Ph.D, Malaysian Nuclear
Agency

INTERNATIONAL EDITORS

Abdul Aziz Tajuddin, Ph.D, Universiti Sains
Malaysia, Malaysia

Sharif Hegers, Ph.D, Los Alamos National
Laboratory, United States of America

Paul Huibers, Ph.D, Ars Digita Corporation, United
States of America

Yosuke Katsumura, Ph.D, University of Tokyo,
Japan

Edi Giri Putra, Ph.D, National Nuclear Energy
Agency, Indonesia

Journal of Nuclear and Related Technologies (JNRT) is a bi-annual scientific and technology journal related to the use of nuclear science and technology in the fields of medicine, industry, agriculture and research. It was first published in 1983 (known as **Jurnal Sains Nuklear Malaysia**) by the Tun Ismail Atomic Research Centre (currently known as Malaysian Nuclear Agency). Since 1999, the management and publication of this journal was entrusted to the Malaysian Nuclear Society (MNS). Under MNS JNRT expands its editorial board to include local as well as international experts in various fields related to the thrust of this journal. The new JNRT cover depicts part of the MNS logo, as well as the full MNS logo at the bottom left of the cover page. The Editorial Board of JNRT and MNS welcome and thank contributors to this journal. The statements and opinions expressed in the published articles and the communication herein are those of the author(s) and not necessarily of the editor(s) or the publisher. The Editorial Board of JNRT, MNS and the publisher claim no responsibility to any omissions or inaccuracies, nor guarantee their contents.

Publishing Office:

Journal of Nuclear & Related Technologies
Malaysian Nuclear Society
c/o Malaysian Nuclear Agency
43000 Kajang, Selangor D.E. MALAYSIA

Tel: 603-8925 0510; Fax: 603-8925 0907
<http://www.nuklearmalaysia.org>

Editorial Secretariat:

Azraf Azman
e-mail: azraf@nuclearmalaysia.gov.my

Advertisement & Subscription:

Shalina Sheik Muhamad
e-mail: shalina@nuclearmalaysia.gov.my

Printed By:

MNS Publication.
Bandar Baru Bangi, Selangor, MALAYSIA

© (2019) by the Malaysian Nuclear Society

JOURNAL of NUCLEAR and Related TECHNOLOGIES (JNRT)
Vol. 16, No. 2, December 2019

CONTENTS

1. Message from Chief Editor	i
2. Penentuan kepekatan radionuklid tabii dan logam berat dalam sampel kekacang yang terdapat di malaysia serta kesan radiologi terhadap manusia	1
<i>Nur Lidiya Abdul Aziz, Norsyahidah Mohd Hidzir, Nur Ain Mohd Radzali, dan Syazwani Mohd Fadzil</i>	
3. Analysis on k_{eff} fuel arrangement of PUSPATI TRIGA Reactor Core with added mass of thorium fuel in Reactor Core	11
<i>Abdul Hannan Damahuri, Hassan Mohamed, Mohamad Hairie Rabir, Abdul Aziz Mohamed, Faridah Mohamad Idris</i>	
4. Analysis on k_{eff} fuel arrangement of PUSPATI TRIGA Reactor Core with different power of reactor core	18
<i>Abdul Hannan Damahuri, Hassan Mohamed, Mohamad Hairie Rabir, Abdul Aziz Mohamed, Faridah Mohamad Idris</i>	
5. Recovery of thorium and rare earth element (REE) from different particle size of xenotime mineral	25
<i>R Hazan, J Kones, K Mohamed Takip, N A Sapiee, N Azhar and W Paulus</i>	