# NUTECH-2014

Warsaw, 21-24 September 2014
International Conference on

## Development and Applications of Nuclear Technologies

# CONFERENCE ABSTRACTS & PROGRAMME

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# CONFERENCE PROGRAMME

## Sunday, 21 September 2014

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|---|---|
| 16:30 – 19:00 | Registration of participants |
| 19:00 | **Welcome cocktail in Novotel Airport Hotel** |

## Monday, 22 September 2014

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| 9:00 – 11:30 | **Opening of the Conference<br>Plenary Session<br>Chair: Andrzej G. Chmielewski** | | | |
| 9:00 – 9:30 | **Andrzej G. Chmielewski**<br>Chairman of the Conference<br>*Institute of Nuclear Chemistry and Technology, Poland* | | OPENING OF THE CONFERENCE | |
| 9:30 – 10:00 | **Patric Brisset**<br>*IAEA, Austria* | | RADIATION TECHNOLOGIES DEVELOPMENT FROM PERSPECTIVE OF IAEA | |
| 10:00 – 10:30 | **Mr. Thibaud Michel**<br>*EDF SA, head of project management office Flamanville 3 (EPR) France* | | FLAMANVILLE 3 EPR PROJECT: EDF'S ACTIVITIES ON CONSTRUCTION OF THE NEW FACILITY | |
| 10:30 – 11:00 | **Sueo Machi**<br>*FNCA Coordinator of Japan, former Commissioner of Atomic Energy Commission (AEC) of Japan* | | PERSPECTIVES OF NUCLEAR POWER IN ASIA AND JAPAN FOR THE SUSTAINABLE DEVELOPMENT | |
| 11:00 – 11:30 | **Bernard Faucher**<br>*ANDRA, France* | | COST AND FINANCING ISSUES IN RADIOACTIVE WASTE DISPOSAL | |
| 11:30 – 12:00 | **Coffee break** | | | |
| 12:00 – 14:00 | **Parallel Sessions** | | | |
| | **Chemical Aspects of Nuclear Energy& Materials<br>Chair: Christophe Poinssot** | | **Radiation Techniques in Protecting of Environment<br>Chair: Mubarak A Khan** | |
| 12:00 – 12:20 | Christophe Poinssot, Stéphane Bourg, Noël Ouvrier<br>*French Alternative Energy and Nuclear Energy Commission, France* | ASSESSMENT OF THE OVERALL ENVIRONMENTAL FOOTPRINT OF CURRENT AND FUTURE NUCLEAR FUEL CYCLES. INSIGHTS FROM LIFE CYCLE ASSESSMENT SIMULATION | Eliana Pereira, Lillian Barros, Amilcar L. Antonio, Andrzej Rafalski, Isabel C.F.R. Ferreira<br>*Nuclear and Technological Institute, Portugal* | EFFECTS OF GAMMA AND ELECTRON-BEAM IRRADIATION ON THE ANTIOXIDANT POTENTIAL OF MELISSA OFFICINALIS L. INFUSIONS |

# EFFECTS OF GAMMA AND ELECTRON-BEAM IRRADIATION ON THE ANTIOXIDANT POTENTIAL OF *MELISSA OFFICINALIS* L. INFUSIONS

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Gamma and electron beam irradiation are two processes authorized for food processing, characterized as technically and economically feasible procedures, and safe, with a powerful antimicrobial effect. These decontamination methods have advantages that are increasingly attracting the market and present a good alternative to other methods [1,2]. In this work, the effects of gamma irradiation and electron beam on antioxidant activity of *Melissa officinalis* L., were evaluated. Infusions were prepared from non-irradiated and irradiated samples (1 and 10 kGy), and their radical scavenging activity, reducing power and inhibition of lipid peroxidation were assessed. According to the results obtained, it was concluded that in samples exposed to gamma irradiation, the highest antioxidant potential was displayed by the infusions prepared from the samples irradiated at 1 kGy, as well as the highest concentration of phenols and flavonoids. Regarding the samples exposed to electron beam irradiation, the mentioned effects were not so evident and, in most of the cases, no changes were observed among non-irradiated and irradiated samples. Overall, irradiation might represent a suitable solution for *M. officinalis* postharvest treatment, since the use of irradiation did not interfere with its antioxidant properties, and gamma irradiation at 1 kGy even improved some of the antioxidant potential, preserving the bioactive compounds that confer health beneficial effects.

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References:

1. Mizani, M., Sheikh, N., Ebrahimi, S. N., Gerami, A., & Tavakoli, F. A. (2009); *Radiat Phys Chem*, **78**, 806–809.
2. Lianzhong, D., Yixu, L., Shiyue, D., Yan, Z. & Songmei, Z. (1998); *Radiat Phys Chem*, **52**, 49–52.