
GammaRay 2018 Proceedings: Seminar for users of gamma ray spectrometry

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Abstract

In September 2018 a two day seminar for users of gamma ray spectrometry was arranged in Reykjavik, Iceland. 34 participants from 20 organisations were present. Two lecturers were invited: I. Osvath from IAEA, who gave a presentation on the 2017 IAEA proficiency test with a focus on the sample with the more challenging short lived radionuclides, and M. Bruggeman from SCK-CEN, who gave a presentation on efficiency transfer for low-energy gamma-ray spectrometry. In addition, 14 participants presented development and experiences related to gamma-ray spectrometry. This seminar was the 9th in a serie since 2009 financed by NKS.

Key words

Gamma ray spectrometry

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GammaRay 2018 Proceedings

Seminar for users of gamma ray spectrometry

Reykjavik, Iceland,
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Introduction

In 2009 an NKS activity on gamma spectrometric measurements was started. This was after many years of limited interaction between practitioners of gamma spectrometry within the Nordic countries. Since the first seminar in 2009 there have been almost annual meetings in the Nordic countries. All seminars have attracted a large number of participants, who always have been very positive to these meetings and who expressed interest in future seminars.

GammaRay 2018

At the meeting about 34 participants from 20 organisations were present, see Appendix 1. The participants came from universities, industry and authorities. Two lecturers were invited:

- Iolanda Osvath, IAEA Environment Laboratories, Monaco, gave a presentation: *On the analysis of challenging ALMERA Proficiency samples*, where the 2017 IAEA proficiency test on e.g. short lived radionuclides was presented. This proficiency test was more challenging than earlier ones.
- Michel Bruggeman, SCK-CEN, Belgium, who gave a presentation entitled *Efficiency transfer for low-energy (30-100 keV) gamma-ray spectrometry analysis*, which can be challenging when the matrix is unknown.

Fourteen additional presentations were given by the participants:

- Nikola Markovic, DTU Nutech: *Activity standardization by γ - γ coincidence methods*
- Kara Phillips, Mirion Technologies Inc.: *Correlation Effects in Gamma Spectroscopy Efficiency Calibrations and their Impact on Activity and Uncertainty Quantification*
- Linda Corneliusson, Ringhals, Vattenfall: *Sn-117m or Te-123m?*
- Roy Pöllänen, STUK: *Recent RTD-activities on gamma-ray spectrometry in STUK*
- Jani Turunen, STUK: *RADICAL – New research project at STUK*
- Sven Nielsen, DTU Nutech: *Recent check of calibration across detectors*
- Marc Breidenbach, AMETEK GmbH: *LVis – a GUI for ORTEC's GammaVision that simplifies TCS correction and efficiency transfer using (M)EFFTRAN*
- Jacobus Andreas Swartz, DTU Nutech: *Gamma-ray spectroscopy with modern scintillation crystals and Silicon Photomultipliers*
- Henrik Ramebäck, FOI: *A Monte Carlo Method for uncertainty calculation in gamma spectrometry*
- Anna Rand, IFE: *Results of the sediment samples*
- Tim Vidmar, SCK-CEN: *Sensitivity of TCS correction factors to uncertainty in the computed total efficiency*
- Thomas B. Aleksandersen, Statens Strålevern: *CONTEX 2018: UAVs and gamma spectrometry*
- Trygve Bjerck, IFE, Nikola Markovic, DTU Nutech: *Intercomparison on identification of radionuclides in low- and high-resolution gamma spectra*
- Antti Kallio, STUK: *Analysis of natural series using UniSampo-Shaman – considerations and case studies*

The seminar programme is listed in Appendix 2 and the presentations have been made available at the GammaWiki web site

(https://www.gr.is/wiki/GammaWiki/index.php/GammaRay_2018).

The overall feedback from participants was, as for previous seminars, positive, see Appendix 3.

All participants believe this is an important event in order to learn and share experiences, and are looking forward to future events.

Appendix 1 – List of participants

Name	Organisation	Country
Antti Kallio	STUK	Finland
Iolanda Osvath	IAEA	Monaco
Gísli Jónsson	IRSA	Iceland
Kjartan Guðnason	IRSA	Iceland
Marjan Ilkov	IRSA	Iceland
Edda Lína Gunnarsdóttir	IRSA	Iceland
Roy Pöllänen	STUK	Finland
Stefan Isaksson	Gammadata Instrument AB	Sweden
Reko Simola	STUK	Finland
Tim Widmar	SCKCEN	Belgium
Sune Juul Krogh	DEMA	Denmark
Jonas Mazeika	Nature Research Centre	Lithuania
Michel Bruggeman	SCK•CEN laboratories LRM	Belgium
Sven Nielsen	DTU Nutech	Denmark
Kerttuli Helariutta	University of Helsinki, Department of Chemistry	Finland
Sofia Jonsson	FOI	Sweden
Henrik Ramebäck	FOI	Sweden
Nikola Markovic	DTU Nutech	Denmark
Marc Breidenbach	AMETEK GmbH	Germany
Merja Tanhua-Tyrkkö	VTT - Technical Research Centre of Finland	Finland
Thomas B. Aleksandersen	Statens strålevern	Norway
Linda Corneliusson	Vattenfall Ringhals	Sweden
Jacobus Andreas Swartz	DTU Nutech	Denmark
Gérard Darmon	Mirion Technologies	France
Kara Phillips	Mirion Technologies (Canberra), Inc.	USA
Jani Turunen	STUK	Finland
Joris van Schaik	Gammadata Instrument AB	Sweden
Michel Ceuppens	Mirion / Canberra	Belgium
Ina Bendler	BSH, Marine Chemistry, Radioactivity, Federal Maritime and Hydrographic Agency	Germany
Christine Ellingsen	Bayer AS	Norway
Anders Halgunset	Bayer AS	Norway
Anna Rand	IFE	Norway
Trygve Olav Bjerk	IFE	Norway
Eirik Gundersen	Nerliens Meszansky AS	Norway

Appendix 2 – Seminar Programme

Tuesday, 25 September				
Start	End	Duration	Speaker	Title
09:00	09:15	00:15		Registration
09:15	09:30	00:15	Kjartan	Opening and practical information
09:30	10:15	00:45	Iolanda Osvath, IAEA-MEL	<i>Invited lecture:</i> On the analysis of challenging ALMERA Proficiency Test samples
10:15	10:45	00:30		Coffee break
10:45	11:30	00:45	Michel Bruggeman, SCK-CEN	<i>Invited lecture:</i> Efficiency transfer for low-energy (30-100 keV) gamma-ray spectrometry analyses
11:30	13:00	01:30		Lunch
13:00	13:20	00:20	Nikola Markovic, DTU Nutech	Activity standardization by γ - γ coincidence methods
13:20	13:40	00:20	Kara Phillips, Mirion Technologies Inc.	Correlation Effects in Gamma Spectroscopy Efficiency Calibrations and their Impact on Activity and Uncertainty Quantification
13:40	14:00	00:20	Linda Corneliusson, Ringhals, Vattenfall	Sn-117m or Te-123m?
14:00	14:20	00:20	Roy Pöllänen, STUK	Recent RTD-activities on gamma-ray spectrometry in STUK
14:20	14:40	00:20	Jani Turunen, STUK	RADICAL – New research project at STUK
14:40	15:20	00:40		Coffee break
15:20	15:40	00:20	Sven Nielsen, DTU Nutech	Recent check of calibration across detectors
15:40	16:00	00:20		Announcements and information
19:30			Seminar dinner in Reykjavik	Austurlandhraðlestin (https://www.hradlestin.is/groupmenus) (Your way to there from Grand Hotel)
Wednesday, 26 September				
09:00	09:20	00:20	Marc Breidenbach, AMETEK GmbH	LVis – a GUI for ORTEC's GammaVision that simplifies TCS correction and efficiency transfer using (M)EFFTRAN
09:20	09:40	00:20	Jacobus Andreas Swartz, DTU Nutech	Gamma-ray spectrometry with modern scintillation crystals and Silicon Photomultipliers
09:40	10:00	00:20	Henrik Ramebäck, FOI	A Monte Carlo Method for uncertainty calculation in gamma spectrometry
10:00	10:30	00:30		Coffee break
10:30	10:50	00:20	Anna Rand, IFE	Results of the sediment samples
10:50	11:10	00:20	Tim Vidmar, SCK-CEN	Sensitivity of TCS correction factors to uncertainty in the computed total efficiency
11:10	11:30	00:20	Thomas B. Aleksandersen, Statens Strålevern	CONTEX 2018: UAVs and gamma spectrometry
11:30	13:00	01:30		Lunch
13:00	13:20	00:20	Trygve Bjerk, IFE Nikola Markovic, DTU Nutech	Intercomparison on identification of radionuclides in low- and high-resolution gamma spectra
13:20	13:40	00:20	Antti Kallio, STUK	Analysis of natural series using UniSampo-Shaman –considerations and case studies
13:40	14:10	00:30		Coffee break
14:10	14:40	00:30		Participant feedback survey
14:40	15:10	00:30		Seminar round up, future gamma spectrometry meetings
15:10				End of Seminar

Appendix 3 – Participant feedback

<ul style="list-style-type: none"> • Very nice seminar with very good presentations • Good chemistry between the participants • Nicely organized • Themes for next seminar: <ul style="list-style-type: none"> -Neutron activation analysis -Libraries -Evaluation of analyzing softwares -Low resolution softwares
<ul style="list-style-type: none"> • Very good • Themes for next seminar: <ul style="list-style-type: none"> -Difficulties and solutions for hardware and software -How and what to report for unknown samples
<ul style="list-style-type: none"> • +: <ul style="list-style-type: none"> Interesting presentaitons Relaxed and informal meeting Very interesting samples and intercomparisons • -: <ul style="list-style-type: none"> Could be better information before the seminar
<ul style="list-style-type: none"> • Overall a very nice seminar • Would have liked some hands-on experiences including analysis
<ul style="list-style-type: none"> • Very good seminar and very valuable to the end-users • The continuation of these seminars is important from an end-user perspective • Themes for future seminars: <ul style="list-style-type: none"> -In situ measurements -Mobile measurements -UAV -Laboratory measurements
<ul style="list-style-type: none"> • +: <ul style="list-style-type: none"> Content of presentations • -: <ul style="list-style-type: none"> Would have liked earlier information on the seminar Hotel a bit closer to the meeting Better instructions for the intercomparisons • Overall a good and useful workshop • Themes for next seminar: <ul style="list-style-type: none"> -Effect on background to natural activity determinations -Measuring high activity samples
<ul style="list-style-type: none"> • Good seminar with interesting and practical presentations • Useful to hear about problems or challenges that people are facing
<ul style="list-style-type: none"> • Not sticking to a theme may be an advantage since everybody can contribute since there is no need to link presentations to a theme
<ul style="list-style-type: none"> • As always the informal discussions between the sessions are almost as good for learning new things as the presentations themselves • This year's seminar offered a great deal for me • I appreciated the presentation by Iolanda since we participate in the PT

<ul style="list-style-type: none"> • This seminar has been excellent • Important to keep this going • Themes for next seminar: <ul style="list-style-type: none"> -New development -List mode -Field gamma applications -Routine vs. special lab analysis -QA/QC • Intercomparisons very important
<ul style="list-style-type: none"> • Great meeting with many very good and relevant presentations
<ul style="list-style-type: none"> • Themes for next seminar: <ul style="list-style-type: none"> -Uncertainties and compositional effects to efficiency -Practical session on Monte Carlo uncertainty estimations
<ul style="list-style-type: none"> • As a newcomer this seminar has been a great introduction to the community. • Friendly atmosphere • I have learned a lot • Although I did not give a presentation, this would have been a great forum to present and discuss issues that I experience with a huge amount of knowledge in one room, with very little competition or judgement of others. • Intercomparisons were a good learning experience
<ul style="list-style-type: none"> • The level of expertise and sharing of problems was very valuable
<ul style="list-style-type: none"> • Repeat intercomparison tests • Practical issues in in situ measurements • Possible missing and useful software tools
<ul style="list-style-type: none"> • Overall a very good seminar • I got a lot of good inputs I can bring home
<ul style="list-style-type: none"> • There were very few talks on mobile and in situ gamma spectrometry
<ul style="list-style-type: none"> • Nice informal meeting • Themes for next seminar: <ul style="list-style-type: none"> -NAA
<ul style="list-style-type: none"> • Perhaps research in gamma ray spectrometry could be a theme? • Publish some of the presentations as peer reviewed papers in an international journal?
<ul style="list-style-type: none"> • Invite a few more experts on gamma spectrometry from abroad (USA, Russia, France,...) to share their experiences • Themes for next seminar: <ul style="list-style-type: none"> -Decommissioning and dismantling with gamma spectrometry -In situ measurements -Sampling

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