



Regional Training Course on Residence Time Distribution and Column Scanning Techniques, Seibersdorf and Vienna, AUSTRIA, from 28 November to 9 December 2022

International Atomic Energy Agency (IAEA) successfully hosted a training course in Seibersdorf and Vienna, Austria, from 28 November to 9 December 2022. The training course was organized under the regional project “RER1023, Harmonizing Implementation of Radiotracer and Sealed Sources Techniques for Efficient Use of Natural Resources and Environmental Monitoring” managed by Ms. Tomoko Furusawa

Experts led theoretical and practical courses from the International Society for Tracer and Radiation Applications (ISTRA). Twelve participants from eight countries attended the training course.



Figure 1. Group photos of the participants



The first week of the training focused on theoretical instruction in the basics of radiation physics and radiation protection, radioactive tracer, gamma scanning methodologies, and technologies. The participants had the opportunity to learn actual industrial applications and carry out fundamental exercises using the supplied RTD software. The diversity of use and economic benefits of the mentioned techniques in the industry was emphasized. In addition, attention was drawn to the importance of implementing and promoting these techniques in the participants' own countries.

The experimental practice began in the second week after the basic theoretical training was completed. First, the column scanning technique coupled with monitoring software was demonstrated in laboratory conditions using an X-ray generator and a column. The participants prepared various internal configurations that represent real situations, made measurements, and analyzed the results to further comprehend the technique.



Figure 2. Different configurations of the column for the column scanning experiments



The flow rate and the residence time distribution (RTD) of the flow rig were evaluated in various experimental conditions such as the utilization of different flow rates and mixing rates. Fluorodeoxyglucose-18F (FDG) was used as a radiotracer. Participants learned how to apply the radiotracer safely and had the opportunity to inject it into the flow rig's pipe as part of the training. RTD software and the EXCEL spreadsheet were used to analyze the experimental data.

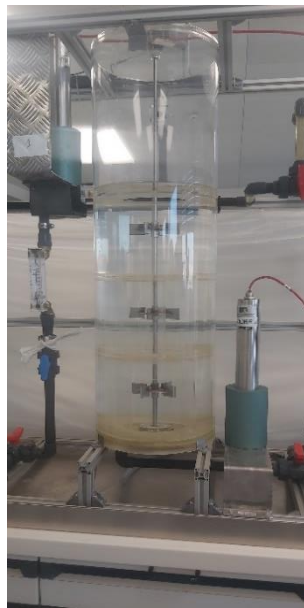


Figure 3. Flow rig experiments with Dr. Thorsten Jentsch



Figure 4. Injection of radiotracer by participants

The training course was concluded successfully by the examination and Level-2 certification in Radiotracer Method, Residence Time Distribution Technique (RTM/RTD), and Sealed Sources Method - Scan Techniques (SSM/SCT) of all twelve participants.



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Figure 5. Participants before the exam

The two-week regional training course was very useful and successful. Participants gained expertise in Column Scanning and RTD techniques, and they were ready and prepared to begin promoting and implementing these techniques in their countries.

Thanks to Ms. Hannah A. Affum and Mr. Gerardo Antonio Maghella Seminario from IAEA, and Dr. Jovan Thereska and Dr. Thorsten Jentsch from ISTR, for this great course.

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photos: various photographers, training course participants