INTDS

Newsletter

International Nuclear Targets Development Society

Target Laboratory of the Accelerator Laboratory of the Department of Physics
University of Jyväskylä, Finland

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Contents

Editorial

Dear INTDS Members,

In this edition of Target Laboratories of the World, we present the Target Laboratory at the Accelerator Laboratory of the Department of Physics. A special thanks to Jukka from the University of Jyväskylä, Finland, who, despite his busy schedule (including cross-country skiing!), took the time to contribute to this issue.

This newsletter also includes important updates about this year's Annual Members Meeting.

We are excited to welcome Martha Dibblee as a new member of INTDS! Martha, who is the editor of the Accelerator Radiation Safety Newsletter, invites all INTDS members to submit their contributions for future editions.

It is with a heavy heart that we announce the passing of David Gilliam on June 12, 2025. David was a valued member of INTDS and worked at the National Institute of Standards and Technology (NIST) in the Ionizing Radiation Division of the Physics Laboratory in Gaithersburg. Our deepest condolences go out to his family and colleagues.

Looking ahead to 2026, we are thrilled to announce an exciting year for target makers, with four key events scheduled worldwide. These include the 32nd INTDS World Conference and the 20th Workshop on Targetry and Target Chemistry, both to be held in Japan. Additionally, the 9th High Power Targetry Workshop will take place at CERN in Switzerland, and the EURO-LABS Basic Training School 2026 will be hosted in Romania.

As always, we encourage you to contribute to the INTDS newsletter! Whether it is ideas, announcements, advertisements, or topics of interest to share with your fellow target makers, we would love to hear from you. Please reach out to us at INTDS-Newsletter@gsi.de.

Wishing you all a joyful holiday season!
Kind regards,
Birgit Kindler and Noemi Cerboni

Target Laboratories of the World

Target Laboratory of the Accelerator Laboratory of the Department of Physics (JYFL-ACCLAB)
University of Jyväskylä, Finland
Jukka Jaatinen

JYFL-ACCLAB is an international-class accelerator laboratory and one of the largest research infrastructures in Finland. The laboratory trains a wide range of experts in radiation, nuclear and accelerator-based physics.
Our target laboratory is responsible for producing most of the targets used by in-house research groups as well as external facility users. Most of these targets are thin metallic foils, typically fabricated using cold-rolling techniques. In addition to their use as targets, thin films are also employed as substrate materials for other experimental techniques. The laboratory has two rolling machines (figure 1): one motor-driven and one manually operated. The motorized system is used for more than 90% of foil production. However, for air- or moisture-sensitive materials—such as metallic calcium—the manual rolling machine is used instead, as it is enclosed within an acrylic enclosure that enables working under dry or inert-gas atmospheres.

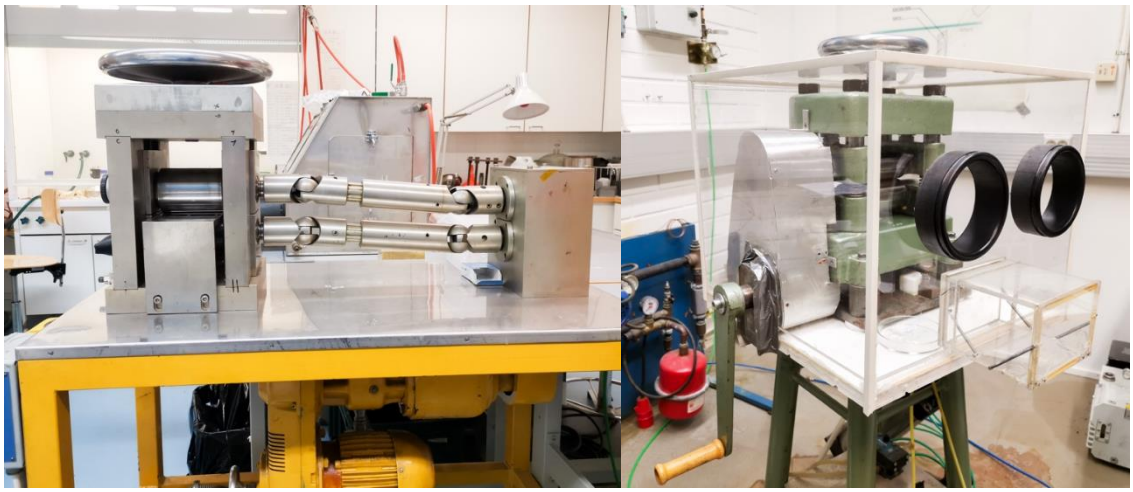


Figure 1: Thin metal foils can be rolled with two rolling machines; motor-driven (left) and manual operated (right).

In addition to cold rolling, targets at JYFL are fabricated using two thin-film deposition techniques. The first is physical vapor deposition performed with a resistive thermal vacuum evaporator (figure 2). High vacuum conditions (below 10−5 Torr) are achieved using a turbomolecular pump backed by a scroll pump. Both, a boat and a filament-heated crucible can be employed as evaporation sources, depending on the material.

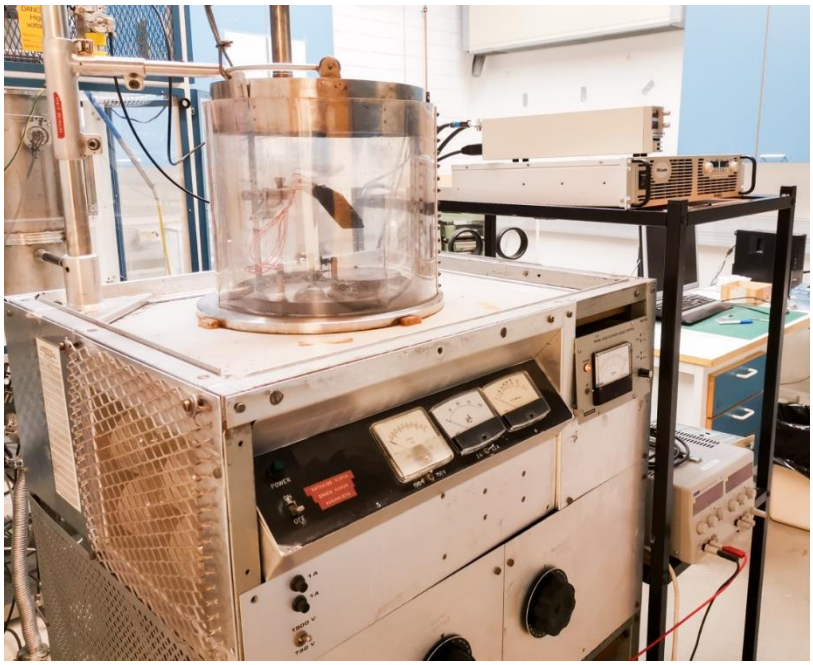


Figure 2: Resistive thermal vacuum evaoprator

The second and more frequently used method is ion-beam deposition. The target laboratory operates a sputtering system that employs a focused and accelerated argon ion beam to produce thin-film samples and targets (figure 3). The ion source is based on the original design of Dr. N.–K. Leung, while the complete device has been redesigned and constructed in-house. The system was initially developed to meet the requirements of two distinct applications: (1) fabrication of targets for nuclear physics experiments and (2) serial sectioning for solid-state diffusion studies. Despite the differing demands, a carefully optimized design enabled satisfactory performance for both uses. Today, the sputtering system is employed almost exclusively for target fabrication.

During sputtering, the argon ion beam is directed onto the source material mounted on a tilted holder beneath the ion source (figure 4). Ejected atoms condense onto a substrate positioned opposite the target on a rotatable sample holder. The deposition process is relatively slow; producing a single target typically requires 4–8 hours. Resulting targets generally exhibit areal densities ranging from a few hundred $\mu g/cm^2$ to approximately 1 mg/cm^2, with diameters between 7 and 15 mm, depending on the intended application.

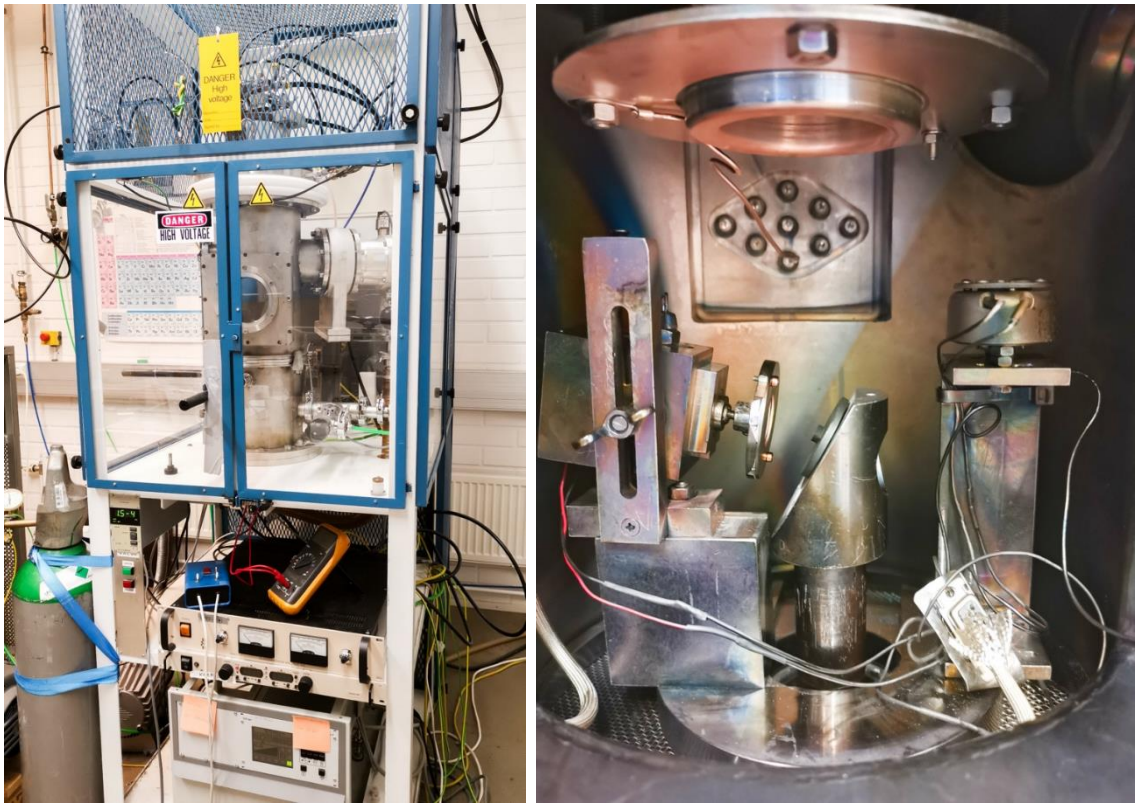


Figure 3: Sputter ion source cabinet (left) and the sputtering chamber with the lid open (right). In the sputtering setup, the accelerated argon ion beam strikes the source material mounted on a tilted holder, causing atoms to be ejected and subsequently deposited onto a nearby rotatable substrate.

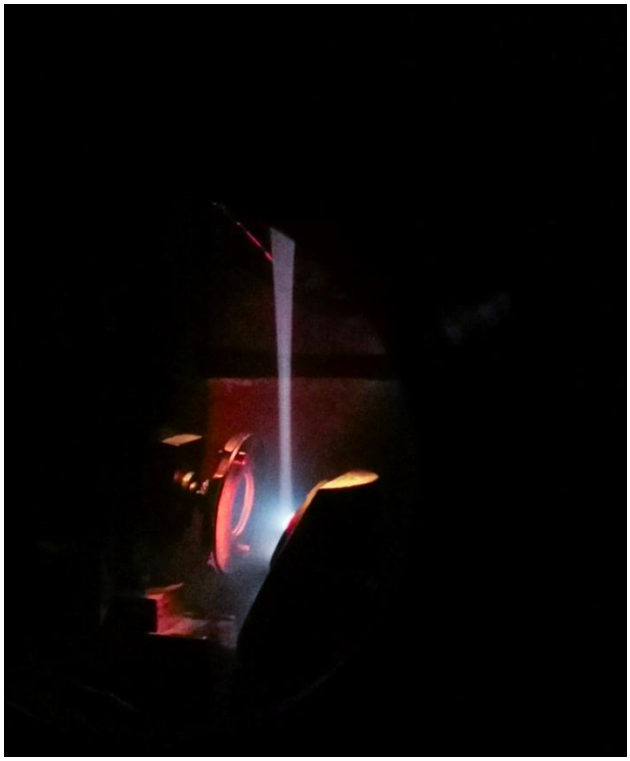


Figure 4: Sputtering ion source in operation.

The thickness of a target is typically determined from its measured area and mass, which provides a sufficiently accurate estimate for most applications. In specific cases, the thickness can also be evaluated using alpha-particle energy-loss measurements. For more detailed characterization, samples can be analyzed at the nearby Nanoscience Center, located on the same campus. The Nanoscience Center is an interdisciplinary research facility integrating physics, chemistry, and biology, and is equipped with advanced instrumentation, including a scanning electron microscope, high-resolution atomic force microscopes, and an X-ray diffractometer.

In addition to target fabrication, the JYFL target laboratory plays a significant role in the production of ion beams for the ECR ion sources. Since these ion sources can generate ion beams also from solid materials, the source materials must be prepared using equipment available in the target laboratory. For example, to produce Ca or Sr ion beams, the corresponding oxide and a reducing agent are mixed and compressed into pellets using a hydraulic pellet press, the same instrument employed for preparing pellets for ion-beam deposition. Another important contribution of the target laboratory to ion-beam production is the preparation of materials for the MIVOC (Metal Ions from VOlatile Compounds) method used with the ECR ion sources. MIVOC technique was originally developed in Jyväskylä.

2025 Annual Meeting of the INTDS Members

By means of electronic communication

As mentioned in the **Bylaws Article IV, Section 4.04**, an annual meeting of the Members shall be held at the place, time, and date, as may be fixed by the Board. The Board may, in its sole discretion, determine that the Annual Meeting of the Members be held solely by means of electronic communication, as more fully set forth in **Bylaws Article IV, Section 4.06**.

The Members of the INTDS are requested to take note of the information submitted via this electronic communication and are welcome to propose their remarks to the Board before **December 12th, 2025, to intds@intds.org.**

Current Executive Board of the INTDS (for full details see https://www.intds.org/societys-board/)

President:
Ntombizonke Kheswa

Vice-President:
Bettina Lommel

Past-President:
Christelle Stodel

Elected directors:

Matthew Gott
Ntombizonke Kheswa
Dannie Steski
Christelle Stodel
Bettina Lommel
Emilio Maugeri
Wim Weterings

Appointed officers:

Corresponding secretary/treasurer:
Dannie Steski
Treasurer assistant:
Mathew Gott
Recording Secretary:
Birgit Kindler
Newsletter editor:
Birgit Kindler &
Noemi Cerboni
Bibliography index manager and *webmaster*:
Kristian Myhre &
Anna Stolarz

AGENDA

1. Introduction
2. Membership Status
3. Financial Report
    - 3.1 Treasurer's Report
    - 3.2 INTDS 2024 Conference Expenses
4. Decisions by the Board
5. INTDS Newsletter
6. Board Election
7. INTDS 2026 Conference
8. INTDS 2028 Conference
9. Social Media Visibility

1. Introduction

I extend a warm welcome to all participants and express my gratitude for your attendance at this electronic meeting, regardless of your geographic locations. My name is Ntombizonke Kheswa, and I serve as the current President of the International Target Development Society (INTDS).

The primary objective of this meeting is to provide updates on our financial standing alongside the current status of INTDS membership. We will also present the decisions made by the Board and hear updates from our newsletter editorial team regarding developments since our last gathering. Additionally, we will discuss the forthcoming vacancies in directorial positions and outline the process for filling these roles. The electoral committee, selected by the Board, will be introduced to the Members, and the committee is to oversee the voting procedure for these vacancies, and will provide guidance on this process.

Furthermore, the agenda includes discussions about the 32nd World INTDS conference scheduled for 2026, as well as the subsequent conference planned for 2028. An examination of our social media strategies will also be introduced, focusing on enhancing the visibility and relevance of our society.
This meeting will be open for participation from November 25th until December 12th, 2025. We kindly ask participants to submit their comments or questions regarding the meeting to intds@intds.org. Additionally, we request that Members refrain from sharing the link and the access credentials with unauthorized individuals. Thank you for your cooperation.

In closing, I wish to highlight that every participant plays a crucial role in our endeavours. I look forward to your valuable contributions during our discussions.

2. Membership Status

The following report, with the membership status on 20th October 2025 was respectfully submitted by Dannie Steski, Treasurer INTDS.

	Aug. 2024	Oct. 2025
Sustaining Members	2	3
Regular Member	40	52
Emeritus	14	10
Total	**56**	**65**

Regular Membership by Continent:		
Europe	20	25
North America	18	25
Asia	3	3
Africa	1	1
Australia	0	1
South America	0	0
Middle East	0	0
Total	**42**	**55**

3. Financial Report

4. Decisions by the Board

The following report was respectfully submitted November 13, 2025, by Birgit Kindler, recording secretary INTDS.

- The INTDS mailing list will be implemented to the INTDS website soon. Further information for the Members will probably come in the next INTDS newsletter. Furthermore, information will be sent to all participants of the former list.
- The host's conference guidelines were updated and approved.
- The organizers of the INTDS 2026 and of the Workshop for Targetry and Target Chemistry (WTTC20) which will take place in Nara, Japan, one week before the INTDS conference met. It was decided to have a joint session during both conferences to find common interests in both organizations.
- Also of interest to our community is the 9th High Power Targetry Workshop (HPTW2026) held in November 16–21, 2026 at CERN.

- The nomination committee for the Board elections was formerly approved (see Chapter 6).
- The sustaining membership fees will be spent for replenishing the Karasek Fund.
- The President prolonged the appointment of Christelle Stodel as Past President for her support.

5. INTDS Newsletter

The following report was respectfully submitted November 13, 2025, by Birgit Kindler and Noemi Cerboni, Newsletter editors INTDS.

- Newsletter #53 was sent on December 14, 2024 (51 recipients) and Newsletter #54 on June 13, 2025 (57 recipients).
- The next Newsletter is planned for beginning of December 2025.
- Contributions, comments, proposals, etc. For future Newsletters are welcome.
- We want to explicitly invite contributions to our feature “Target laboratories of the World” which gives Members the opportunity to present their laboratory and institution to the target maker community!
- Contact via mail INTDS-Newsletter@gsi.de

6. Board Election

The terms for the three positions on the INTDS Board of Directors, currently occupied by Bettina Lommel, Emilio Maugeri and Wim Weterings, are set to expire in September 2026.

The Executive Board has designated a nominating committee with authority as to the matter of filling of these vacancies. The members of this committee are Christelle Stodel, Matthew Gott and Dannie Steski.

INTDS members are encouraged to contact members of the nominating committee with their suggestions for board candidates.

7. INTDS 2026 Conference

The 32nd World Conference of the International Nuclear Target Development Society (INTDS2026), which will be hosted by RIKEN and will take place at RIKEN Nishina Center for Accelerator-based Science, Wako, Saitama, Japan, from August 30th to September 4th, 2026.

Important dates:

2025/11/10 1st Announcement

2026/01/26 2nd Announcement

2026/02/16 - 07/15 Registration

2026/02/16 - 06/15 Abstract submission

~ 2026/5/31 Presentation Acceptance

~ 2026/5/31 Visa information form (if you need temporary visitor VISA)

2026/07/18 Program announcement

2026/8/30-9/4 Conference

Conference Web Page:

Please visit the conference web page for detailed information: https://indico2.riken.jp/event/5355/

Conference Venue:

The conference will take place at the large conference room on the second floor of the Administrative Headquarters, RIKEN Wako campus (https://www.riken.jp/en/access/wako-map/#campus_map).

Scientific Program:

The INTDS Conference covers current research and challenges in target development and application. Participants are invited to submit their contributions linked to the following topics or related subjects:

- Preparation and characterization of high-purity and special materials for target fabrication
- Preparation of thin films and foils (e.g., evaporation, sputtering, electrodeposition, rolling)
- Preparation of radioactive targets
- Preparation of liquid and gas targets
- Beam charge strippers (i.e., foil, liquid, gas, plasma)
- Targets for high-intensity beams
- Targets for special applications (e.g., medical, industrial, controlled fusion)
- Target characterization
- Target recycling and disposal

Local Organizing Committee:	**Scientific Program Committee:**
Hiroki Okuno (RIKEN, Chair)	Ntombizonke Kheswa (iThemba LABS)
Hiroo Hasebe (RIKEN)	Matt Gott (ORNL)
Hiroshi Imao (RIKEN)	Kristian Myhre (ORNL)
Yasuto Miyake (RIKEN)	Wim Weterings (CERN)
Daiya Kaji (RIKEN)	Christelle Stodel (GANIL)
Kouji Morimoto (RIKEN)	Emilio Maugeri (PSI)
Hiromitsu Haba (RIKEN)	Christoph E. Düllmann (Uni Mainz and GSI)
Shin-ichiro Michimasa (RIKEN)	Katharina Domnanich (MSU)
Kaoru Kotoshiba (RIKEN)	Claus Mueller Gatermann (Argonne)
Emiko Isogai (RIKEN)	Bettina Lommel (GSI)

Contact Information:

E-mail address: Intds2026@ml.riken.jp

Postal address:

Dr. Hiroki Okuno (Chair)

RIKEN Nishina Center for Accelerator-Based Science (RNC)
2-1 Hirosawa, Wako, Saitama, 351-0198, JAPAN

8. INTDS 2028 Conference

As we know, preparations for the 32nd INTDS conference, which will be hosted by RIKEN in Japan, are currently underway. Detailed information is already available under Chapter 7 of this electronic Annual Meeting and via announcements on https://www.intds.org/. It is now also time to consider potential hosts for the 33rd INTDS conference 2028. The INTDS Board invites interested parties to submit detailed proposals to host this conference. Please send your suggestions to the President by mail for discussion by the

Board of Directors. For potential proposals, please bear in mind that the conference should ideally alternate between continents to enable as many people as possible to participate.

The Board of Directors will contact all applicants, provide the guidelines for the host, finalise, and communicate the final decision. Proposals for the 34rd INTDS conference 2030 are feasible as well. The host for the INTDS 2028 conference will have the opportunity to present their proposal during the INTDS 2026 conference, inviting attendees to participate.

Additionally, if anyone has suggestions for potential host institutes, please feel free to share them by email to the president as well.

9. Social Media Visibility

The INTDS currently has no active presence on social media. To increase visibility, promote our activities, and strengthen engagement with the wider scientific community, we propose to establish official INTDS social media channels, starting with LinkedIn. We are seeking volunteers with experience or interest in social media management and willing to maintain these channels for a period of at least two years.

10. Closing Remarks (December 12th, 2025)

As today marks the final day of our scheduled electronic meeting, I would like to take this opportunity to thank everyone for their time and participation. I hope everyone has had a chance to review the meeting documents.

In closing, I wish you all a wonderful festive season and a prosperous New Year. I look forward to seeing everyone at our next meeting in Japan for INTDS2026.

Thanks and best regards,
Ntombi

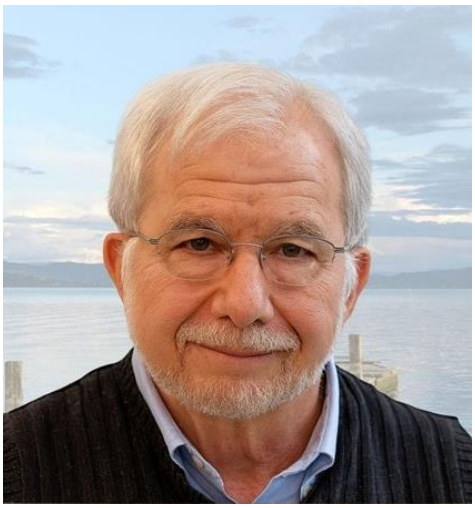
New INTDS Members

We warmly welcome Martha Dibblee as a new member of the INTDS. Martha is editor of the Accelerator Radiation Safety Newsletter, an official publication of the Accelerator Section of the Health Physics Society (HPS) which is distributed quarterly.

The newsletter includes articles of interest to the international accelerator community, including updates on activities at accelerator facilities around the world, articles on accelerator health physics topics, announcements of events and conferences, and job postings. The newsletter is distributed to a wide audience, which includes Accelerator Section and other Health Physics Society members, international accelerator professionals, and regulatory agency representatives.

Martha wants to invite the INTDS members to submit contributions to the newsletter which can be found here:
https://hpschapters.org/sections/accelerator/newsletters.php

Obituary



David Gilliam

May 18.05.1942 — 12.06.2025

David received his Master of Science degree in mechanical engineering in 1966 from Rice University and his Ph.D. in nuclear engineering from the University of Michigan in 1974.

For 36 years, he worked at the National Institute of Standards and Technology (NIST) in the Ionizing Radiation Division of the Physics Laboratory in Gaithersburg, MD. He authored and co-authored more than 70 scientific publications and collaborated with scientists worldwide. Although David primarily functioned as a target user rather than a traditional target maker, he consistently demonstrated a keen interest in target preparation technologies. His contributions to the target development, in majority devoted to target characterization, were much valued by the target community.
He warmly welcomed and supported new members to the INTDS and he supported some sing-along performances during INTDS conference dinners with his wonderful bass.

He served as President of the INTDS from 2003 to 2007 and as Treasurer and Corresponding Secretary for many years, even after his retirement from NIST. In 2004 he hosted the 22nd INTDS conference in Gaithersburg. In recognition of his substantial contributions and dedication to the target maker community, the Society honored him with the Award of Recognition in 2014 during the 27th INTDS World Conference held in Tokyo.

Announcement

We are happy to announce the 32nd world conference of the INTDS hosted by RIKEN, which will take place at RIKEN Nishina Center for Accelerator-based Science, Wako, Saitama, Japan, from August 30th to September 4th, 2026. More information can be found on the official website: https://indico2.riken.jp/event/5355/overview.

Announcement

We would like to bring to your attention to the 20th Workshop on Targetry and Target Chemistry (WTTC20), which will be held in Nara, Japan, from August 23rd to August 27th, 2026. It will be an international scientific event highlighting advancements in solid, liquid, and gas targets used in accelerator-based radionuclide production, along with postirradiation chemical processing. More information can be found on the official website: https://wttc20.ric.u-tokyo.ac.jp/.

Announcement

We would like to bring to your attention to the 9th High Power Targetry Workshop (HPTW2026), which will be held at CERN, Geneva (Meyrin), Switzerland, from November 16th to November 21st, 2026. The HPTW2026 convenes scientists and engineers from the international particle accelerator targetry community. Its scope encompasses applications in neutrino, neutron, radioactive ion beam and material & medical R&D irradiation facilities, including accelerator-driven systems and intensity frontier experiments. More information can be found on the official website: https://indico.cern.ch/event/1352282/.

Announcement

We would like to bring to your attention to the EURO-LABS Basic Training School 2026 (BTS26), which will be held at the Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Bucharest-Magurele, Romania, from May 11th to May 23rd, 2026. The main goal of the BTS26 is to provide effective access to a network of 47 research infrastructures to conduct curiosity-based research, addressing fundamental questions and technological challenges and advancing projects with broad societal impact, fostering knowledge sharing between scientific fields and enhancing Europe's potential for successfully facing future challenges. More information can be found on the official website: https://indico.nipne.ro/event/429/overview.

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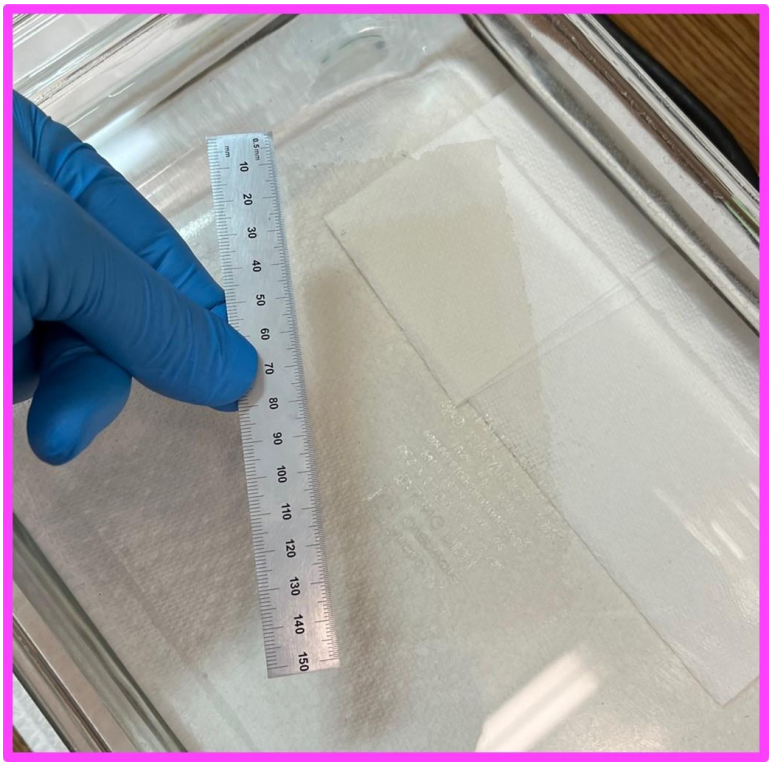

Photo: 0.1µg/cm^2 Arc evaporated carbon foil, 70mm x 140mm floating successfully and waiting for pick up.
Photo has been enhanced so the foil is more visible.

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For further information on the INTDS, please refer to our website: www.intds.org.