

Application for IUVSTA Technical Training Course Grant

***Vacuum technology, principles
and applications***

Hotel Trigán, Štrbské Pleso, Slovakia
October 13 – 16, 2020

A. VINCZE
Councillor Slovak Vacuum Society
132nd IUVSTA Executive Council Meeting
March, 2020, Annecy, France

Vacuum technology, principles and applications

- TTC will be realised as a parallel activity for the conference event with a title School of Vacuum Technology, 13 -16. October 2020.
- The TTC will take full 3 days per 7 hours and will cover:
 - A comprehension of physical principles connected with lower pressure – vacuum.
 - Overview and details to modern methods of production and measurement of vacuum for different vacuum, high- and ultra-high vacuum applications.
 - Overview to a materials suitable for use in vacuum applications, clean room equipments, practical issues of vacuum equipment handling.
 - Useful particularly for young technicians, scientists and PhD. students

Topics

- Basic physical principles and processes I: Kinetic theory of gases, physics of low pressures, basic laws for ideal gases, mean free path, collisions of molecules, sorption, physisorption, chemisorptions, desorption rate, cosine law, transport phenomena, gas flow (4 h).
- Basic physical principles and processes II: evaporation, thermal conductance of gases, conductance, impedance, throughput, diffusion of gases through solid (metal), interaction of particles with solid surface (4 h).
- Vacuum production methods and devices and measurement: Basics of pumping technology, mechanical vacuum pumps (rotary pump, dry pump), turbomolecular pump and other pumps, Vacuum gauges, Partial pressure measurements, Leak detection (4 h).
- Application of vacuum in research, applications of the vacuum technology: mass spectrometer leak detection, mass spectrometry/spectroscopy, mass analysers, methods like Auger, SIMS, XPS, data analysis (5 h).
- Applications of vacuum methods: Practical examples of vacuum applications in various analytical methods and processes, Vacuum materials, Clean rooms, (4 h).

Lecturers

Proposed Teachers (all lectures will be in Slovak, basic terms in English will be given also by the help of the IUVSTA Visual Aids program slides):

Dr. Viera Dubravcova, Slovak University of Technology, Slovakia

Dr. Marian Vesely, Slovak University of Technology, Slovakia

Dr. Andrej Vincze, International Laser Centre, Bratislava, Slovakia

Prof. Eva Majkova, Academy of Sciences, Slovakia

Dr. Ľubomír Vančo, STU Bratislava, Slovakia

Dr. Jozef Novak, Academy of Sciences, Slovakia

Prof. Vladimír Tvarožek, STU Bratislava, Slovakia

Expected level of participants

- Graduate students (with BSc title)
- Master and/or PhD students with technicians from industry and research institutions.
- Expected average number of participants per course: 10-15

Finances

- Expected IUVSTA support: 2 500 €
- Participant fee (incl. accommodation, meals and organisation) without IUVSTA support: 350 €
- Perspective IUVSTA support per participant: 250 €

Finances / proposed budget:

TTC Slovakia

VENUE: Strbske Pleso, Slovakia

DATE: 13 - 16 october 2020

Income	Unit cost (EUR)	Quantity	Sub-Total (EUR)	Remarks
Registration Fee (per person)	50	15	750	15 registered participants
SVS or STU sponsoring	500	1	500	Lodging and expenditures for 2 participants
IUVSTA funding	2 500	1	2 500	Lodging and expenditures for 10 participants
Total (EUR)			3 750	

Expenditures	Unit cost (EUR)	Quantity	Sub-Total (EUR)	Remarks
Meals (3 days per person)	60	15	900	Full board, meals and coffee breaks
Meeting Rooms (per day)	60	3	180	
Hotel Rooms (3 nights)	180	15	2 700	3 nights 60 eur per bed
Total (EUR)			3 780	

Expected participants



Štrbské Pleso (Mountain Lake)

Originally a tourist and sanatory settlement with the highest elevation in the High Tatras. It is situated in the southern bank of the mountain-lake.

The first cottage was built there in 1872. This cottage (owned by Jozef Szentiványi) was a founding point for the tourist centre Štrbské Mountain-lake.

Mountain railway from Tatranská Štrba up to Štrbské Mountain-lake was built in 1876. In 1921 it was rebuilt into a road. Therefore in 1896 another parallel mountain railway was built (in 1933 it was replaced by buses). In 1885 Štrbské Mountain-lake was connected with Old Smokovec and in 1911 another mountain-railway was finished and open to public.

In 1970 when it was necessary to prepare the area for the Winter Ski Championship, new modern accommodation and boarding facilities were built up.

Transport to Štrbské Pleso

- ❑ Connection Bratislava – Poprad (Štrba) is approximately 3 hours with train.
- ❑ The distance between Štrbské Pleso and Poprad is cca 40 km with regular train connections.

Web page of the event:

www.svs.stuba.sk/svt22

<http://svs.stuba.sk/svt22/ttc.html>

Contact to organisers:

skolavt@gmail.com or andrej.vincze@ilc.sk