



REPORT
ON
SUCCESSFUL COMPLETION OF
WEBINAR ON

**“Approaches to synthesis element 120 and
to probe the predicted island of stability”**

Organized By
FST Department
ICFAI University, HP

Submitted By:

Ms. Pooja Sharma

Assistant Professor, ICFAI University, HP

ICFAI University, Himachal Pradesh

Declaration

We are highly indebted to our Hon'ble Vice Chancellor,
Prof. (Dr.) Ramanjeet Singh for his encouragement,
consistent support, guidance and blessings.

CONTENTS

1. Schedule of Webinar
2. Details about the Webinar
3. Participant details
4. Brochure, Media Coverage Clip and Screenshots of the
Webinar

ACTIVITY-2

Title of Webinar:

“Approaches to synthesis element 120 and to probe the predicted island of stability”

Duration – One Hour

Timings – 12:00-01:00 pm

Date- 25 November, 2021

Webinar Mode – Online

Registration Link – <https://forms.gle/ntkHLUTSvBwYCfe7A>

Meet Link- <https://us06web.zoom.us/j/85983827200>

**SECHEDULE
OF
WEBINAR**

SCHEDULE

11:45 AM	Entry start (Zoom)	Mr. Lakshdeep Singh
12:00 PM	Welcome Address	Ms. Pooja Sharma
12:05 PM	Introduction of Guest Speaker	Dr. Sahila Chopra
12:15 PM	Speaker Talk	Dr. Sophia Heinz
01:10 PM	Vote of Thanks	Prof.(Dr.) Ramanjeet Singh & Dr. R K Bhardwaj

**DETAILS ABOUT
WEBINAR**

Dr. Sophia Heinz (Scientist), GSI Helmholtz Centre Darmstadt and Justus-Liebig-University, Giessen, Germany, has successfully delivered a lecture in this international webinar series for the students of ICFAI University, Himachal Pradesh on 25th November, 2021

This International webinar is an initiative of the Ministry of Human Resource Development (MHRD), Govt. of India under the International webinar series.

The webinar was conducted via Zoom and was kick started with the permission of Hon'ble Vice-Chancellor, ICFAI University, Himachal Pradesh. Ms. Pooja Sharma delivered the welcome address and Dr. Sahila Chopra has given the introduction of Dr. Sophia Heinz and about her research achievements.

Thereafter, the Dr. Sophia has delivered a wonderful lecture with very informative presentation on the topic "Approaches to synthesis element 120 and to probe the predicted island of stability". She is working in the field of super-heavy elements, which is the present main interest of science world. As we know the latest known super-heavy element is $Z=118$ now the nuclear scientist is working for the synthesis of $Z=119$ and 120. More than 550 participants attended this webinar through Zoom platform.

After such an informative session, the event concluded with the Vote of Thanks given by Dr. R K Bhardwaj (HOD, FST) who expressed his gratitude to Vice-Chancellor Prof (Dr.) Ramanjeet Singh, Guest Speaker Dr. Sophia Heinz, organizing team and all the students and faculty who attended the event and made it a huge success.

PARTICIPANT

DETAILS

PARTICIPANTS DETAILS

- **STUDENTS**

Total Students Participant: 400

- **FACULTIES**

Total Faculties Participant: 150

BROUCHER & SCREENSHOTS



Approaches to
synthesis element
120 and to probe
the predicted
island of stability

November
25

Thursday, 25 Nov 2021
1200 IST- India & 0730 CET - Germany



Speaker

Dr. Sophia Heinz

Scientist, GSI Helmholtz Centre Darmstadt,
Justus-Liebig-University, Germany



Chief Patron

Prof. (Dr.) Ramanjeet Singh

Vice Chancellor
The ICFAI University,
Himachal Pradesh, India

Scan to register



E - Certificate will be
provided to all the
registered participants

Komal sharma ICFAI

Komal sharma ICFAI

Recording...

Suchen (Alt+M) Sophia Heinz

1 Datei Start Einfügen Zeichnen Entwurf Übergänge Animationen Bildschirmpräsentation Überprüfen Ansicht Aufzeichnung Hilfe

What is a „superheavy“ nucleus ?

The nuclear liquid drop model forbids the existence of nuclei with $Z > 100$
 However, we know nuclei with up to 118 protons!

$$B(Z, A) = a_v A - a_s A^{2/3} - a_c Z^2 A^{-1/3} - a_x \frac{(Z - A/2)^2}{A} + B_s$$

LD nuclear binding energy (Bethe-Weizsäcker formula)

Potential energy / MeV

Quadrupole deformation β_2

- in LD model: fission barrier $B_{f,LD} = 0$ for $Z > 100$
- but: shell effects and pairing effects contribute to the fission barrier:

$$B_f = B_{f,LD} + B_{f,shell} + B_{f,pair}$$

- for nuclei with $Z > 100$: $B_{f,LD} = 0$
- $B_f = B_{f,shell} + B_{f,pair}$
- (for superheavy nuclei: $B_f = 6$ MeV)

Join Audio Start Video Security Participants 330 Chat Share Screen Reactions More End

Windows taskbar: 12:26:45 PM 11/25/2021

Participants (275)

Waiting Room (0) Message Admit all

Joined (7)

- S Sophia (Co-host)
- S Sonam
- S Sonia

1

Invite Mute All

Chat

mam clearly..

Yes mam

SHUBHPREET KAUR to Everyone

KINDLY LET SHILPA RANA IN

Who can see your messages? Recording On

To: Sophia (Direct Message)

Type message here...

Windows taskbar: 12:26:45 PM 11/25/2021

ICFAI sfg Systems

ICFAI Sophia sfg Systems

Recording...

Suchen (Alt+M) Sophia Heinz

1 Datei Start Einfügen Zeichnen Entwurf Übergänge Animationen Bildschirmpräsentation Überprüfen Ansicht Aufzeichnung Hilfe

Search for element 120 in reactions of Cr + Cm at GSI

Experimental setup

The velocity filter SHIP (Separator for Heavy Ion reaction Products)

Ion beam

Target wheel

Quadrupoles

Electric field

Magnets

Beam stop

7.5' Magnet

Ge Detectors

Si Detectors

$N_{\text{reactions}} \approx 100 / \text{s}$

$N_{\text{beam}} \approx 5 \cdot 10^{12} / \text{s}$

$v = E \cdot B$

Join Audio Start Video Security Participants 330 Chat Share Screen Reactions More End

Windows taskbar: 12:54:32 PM 11/25/2021

Participants (248)

Waiting Room (0) Message Admit all

Joined (1)

- S Systems (Co-host)

Invite Mute All

Windows taskbar: 12:54:32 PM 11/25/2021

Zoom Meeting

ICFAI

ICFAI Sophia ICAFI University Ram Krishana Bhardwaj

Recording...

Dr. Ramanjeet Singh

Participants (182)

Q ram

- Ram Krishana Bhardwaj (Co-host)
- Ramandeep
- DR Dr Ram Krishan Bhardwaj
- DR Dr. Ramanjeet Singh (Co-host)
- BY Balram Yadav
- DD Dr Dharambir

Invite Mute All

Chat

1:33:16 PM 11/25/2021

Zoom Meeting

ICFAI

ICFAI Systems Sophia ICAFI University

Recording...

Ram Krishana Bhardwaj

Participants (181)

Q ram

Waiting Room (0) Message Admit all

Joined (6)

- Ram Krishana Bhardwaj (Co-host)
- Ramandeep
- DR Dr Ram Krishan Bhardwaj
- DR Dr. Ramanjeet Singh (Co-host)
- BY Balram Yadav
- DD Dr Dharambir

Invite Mute All

Chat

1:33:04 PM 11/25/2021

ICFAI Systems ICFAI University Ram Krishana Bhardwaj

Recording...

Sophia

Participants (184)

Waiting Room (0) Message Admit all

Joined (6)

- Ram Krishana Bhardwaj (Co-host)
- Ramandeep
- Dr Ram Krishan Bhardwaj
- Dr Ramanieet Singh (Co-host)

Invite Mute All

Chat

already synthesized. so is its probability for magic shell closure is discarded

Manoj Sharma to Everyone

RB+Bi reaction may lead to higher Quasi

Who can see your messages? Recording On

To: Everyone

Type message here...