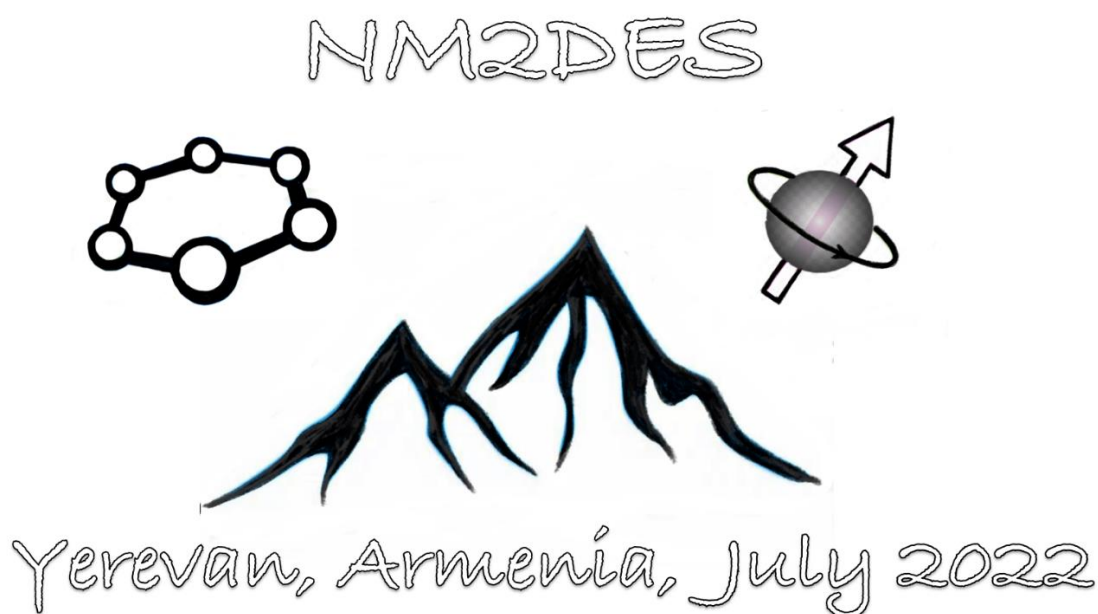


**Open seminar “Novel materials for 2D  
electronics and spintronics (NM2DES)”**

24 - 30 July 2022

Best Western Plus Congress Hotel Yerevan, Armenia



**Saturday 23 July and Sunday 24 July**

Free program in Yerevan & discussion of organizational questions by Ioffe participants

**Monday 25 July**

13:00 Meeting in the lobby of Best Western Plus Congress Hotel

Primary discussions of common collaboration interests in a business lunch format between Ioffe participants and Armenian partners

**Tuesday 26 July**

10:00 Buffet style working breakfast (Best Western Plus Congress Hotel)

**10:55 Session I: Opening and Introduction**

10:55 **Dr. Theresia Knobloch** (TU Wien) Opening remarks

11:00 **Prof. Gagik Shmavonyan** (National Polytechnic University of Armenia)

A review of current situation in physics and materials science in Armenia and possibilities for international collaboration - (30 min)

11:30 **Prof. David Hayrapetyan** (Russian-Armenian University) - (40 min)

Presentation of activities of Russian-Armenian University; Excitonic complexes in semiconductor quantum nanostructures: optical and magnetic properties

12:10 **Prof. Tibor Grasser** (TU Wien)

2D materials studies at TU Wien (20 min)

12:30 **Prof. Luca Pasquali** (University of Modena, ELETTRA synchrotron)

Presentation of ELETTRA and Modena lab facilities (20 min)

12:50 **Prof. Nikolai Sokolov** (Ioffe Institute)

Presentation of Epitaxial Insulators Group (10 min)

13:00-14:00 Buffet style lunch and discussions (Best Western Plus Congress Hotel)

**14:00 Session II: Heterostructures for 2D microelectronics: growth, characterization & device applications (Part I)**

14:00 **Prof. Tibor Grasser** (TU Wien)

The quest for the perfect insulator for 2D semiconductors (30 min)

14:30 **Iliya Ivanov, Alexander Banskikh, Sergey Suturin, and Nikolai Sokolov** (Ioffe Institute)

MBE growth and characterization of nanosized fluoride heterostructures on silicon for application in nanoelectronics (15 min)

14:45 **Prof. Nikolai Sokolov** (Ioffe Institute)

Luminescence and charge transfer processes in rare earth doped epitaxial fluoride heterostructures (30 min)

15:15 **Danila Kuzin, Alexander Korovin** (Ioffe Institute)

Laser MBE growth of rare earths doped oxide heterostructures for nanophotonics (15 min)

15:30 - 16:00 Coffee break

**16:00 Session III: Heterostructures for 2D microelectronics: growth, characterization & device applications (Part II)**

16:00 **Prof. Gagik Shmavonyan** (National Polytechnic University of Armenia)  
Substrates rubbing technology for mass production of 2D materials and structures (30 min)

16:30 **Prof. Luca Pasquali** (University of Modena, Elettra synchrotron)

Advanced synchrotron-based techniques for nanostructure characterization (30 min)

17:00 **Dr. Yury Illarionov** (TU Wien, Ioffe Institute)

Epitaxial fluorides as a universal platform for next-generation 2D electronics (30 min)

17:45 Departure for guided walking tour around Yerevan

Northern Avenue, Republic Square, dancing fountains, Shahumyan Park

20:00 - 22:00 Dinner in Lavash Restaurant

## **Wednesday 27 July**

09:00 - 11:40 Excursion in Yerevan

Vernissage Market, Cascade Complex/Cafesjian Center for the Arts, Ervand Kochar Museum

**12:00 Session IV: Modelling of 2D heterostructures and nanoelectronics devices**

12:00 **Dr. Theresia Knobloch** (TU Wien)

Improving the electrical stability of 2D transistors via Fermi level tuning (30 min)

12:30 **Dominic Waldhör** (TU Wien)

Recent advances in ab-initio modeling of insulator properties (30 min)

13:30-15:00 Lunch with round table discussion (Best Western Plus Congress Hotel)

Suggested topic: Multinational scientific collaboration in nanotechnology

**15:00 Session V: Magnetic materials**

15:00 **Alexander Korovin** (Ioffe Institute)

Laser MBE-grown yttrium iron garnet based heterostructures for microwave applications (30 min)

15:30 **Dr. Sergey Suturin** (Ioffe Institute)

Ultrafast dynamics of spatial magnetic fluctuations in Co/Pt multilayers studied at European XFEL (30 min)

16:00 **Dr. Andrey Badalyan** (Ioffe Institute)

The Role of Oxygen Vacancies in the Formation of Impurity Centers of Transition Elements in Perovskite Crystals (30 min)

16:30 **Dr. Yury Illarionov** (TU Wien, Ioffe Institute), **Dr. Theresia Knobloch** (TU Wien)

Highlights of the recent progress in 2D electronics based on the materials of recent conferences: Graphene 2022, IEEE Latin American Electron Devices Conference (LAEDC), IEEE International Reliability Physics Symposium (IRPS)

17:00 - 18:00 Coffee break and round table discussions

18:30 Departure to Armenian folklore dinner in Ararat Pandok

## **Thursday 28 July**

08:00 - 13:00 Excursion to Armenian religious center

13:00 - 14:30 Lunch in Yerevan Pandok (Teryan)

14:30 - 18:00 Excursion to CANDLE (Center for the Advancement of Natural Discoveries using Light Emission)

18:30 Dinner in Cascade Royal Restaurant - summary of scientific part of the seminar with Prof. Tibor Grasser

## **Friday 29 July**

08:00 – 21:00 North of Armenia – whole day trip from Yerevan

Garni temple, Geghard Rock Monastery, Lake Sevan, Dilijan, Haghartsin Monastery

Lunch: 7 qar (Garni)

Dinner: Sherep (Yerevan)

## **Saturday 30 July**

08:00 – 21:00 South of Armenia – whole day trip from Yerevan

Khor Virap Monastery, Noravank Monastery, Areni Cave of Birds

Lunch: Old bridge winery

Dinner: Vostan (Yerevan)

## **Sunday 31 July**

All TU Wien participants will leave, internal activities organized by Ioffe participants

## **Monday 1 August**

Departure of Ioffe participants