Co-sponsored by

NewMaRe:

New Materials and Renewable Energy

Programme and Abstracts

19-23 September, 2012

Tbilisi, Georgia

Georgian Technical University, Tbilisi, Georgia

Southampton University, UK

http://www.mifp.eu/SCHOOLS/NewMaRE-2012/

***Hosted by*: Professor Archil Prangishvili**
(Georgian Technical university)
***Chaired by*: Professor Alexey Kavokin**
(Southampton University, UK)

ORGANIZATION

Chair: Alexey Kavokin
University of Southampton, UK, Saint-Petersburg State University, SOLAB, Russia

Members:

Giuseppe Eramo
Mediterranean Institute of Fundamental Physics, Rome, Italy

Anna Miroshnichenko
Mediterranean Institute of Fundamental Physics, Rome,Italy

Local organiser commette:

Chair: Rafael Chikovani
Georgian Technical University, Tbilisi, Georgia

Members:

Ia Trapaidze
Georgian Technical University, Tbilisi, Georgia

Lia Trapaidze
Tbilisi State University, Tbilisi, Georgia

Conference will be held in administrative cumpus of Georgian Technical University, third floor metting room;

Kostava 77, 0175, Tbilisi, Georgia

PROGRAMME

Wednesday 19 September 2012

13:00-14:00 Registration

14.00-17.00 Afternoon Session:

14.00-14.10 **Welcome by Convenor**
Archil Prangishvili
(Georgian Technical University, Tbilisi, Georgia)

14.10-14.30 **Presentation by the Chair of the School**
Alexey Kavokin
(University of Southampton, UK, Saint-Petersburg State University, SOLAB, Russia)

14.30-15.00 **The law of parsimony in semiconductor microcavities**
Pavlos Lagoudakis
(University of Southampton, UK)

15.00-15.30 **Manipulating polariton condensates on a chip**
Pavlos Savvidis
(University of Crete, FORTH, Greece)

15.30-16.00 ***Coffee / tea break***

16.00-16.30 **Single photon sources on silicon**
Marco Abbarchi
(École Normale Supérieure, Paris, France)

16.30-17.00 **New Radiation-resistant materials and photovoltaics for Space**
Nodar Kekelidze (Tbilisi State University, Tbilisi, Georgia)

17.30 Dinner
Evening excursion round Tbilisi

Thursday 20 September 2012

10.00-13.00 Morning Session:

10.00-10.30 **Binary polariton quantum fluids, fundamental properties and devices**
Emiliano Cancellieri
(Université Pierre et Marie Curie-Paris 6, École Normale Supérieure et CNRS, Paris, France)

10.30-11.00 **Bosonic Terahertz Lasers Based on GaN**
Alexey Kavokin
(University of Southampton, UK, Saint-Petersburg State University, SOLAB, Russia)

11.00-11.30 **2D Array of Cold-Electron Bolometers for High-Performance Cosmology Experiments**
Leonid Kuzmin
(Chalmers University of Technology, Gothenburg, Sweden)

11.30-12.00 ***Coffee / Tea Break***

12.00-12.30 **Concepts of Graphene Terahertz and Infrared Devices**
Victor Ryzhii
(Tohoku University, Sendai, Japan)

12.30-13.00 **Magnetic navigation of birds and other animals: a challenge for physicists**
Kirill Kavokin
(Ioffe Physical-Technical Institute, SOLAB, Russia)

13.00-14.30 ***Lunch***

14.30-16.00	**Afternoon Session:**
14.30-15.00	**New one dimensional nanomaterials grown in hydrazine vapor** **David Jishiashvili** *(Georgian Technical University, Tbilisi, Georgia)*
15.00-15.30	**Spontaneous emission enhancement in hyperbolic media** **Ivan Iorsh** *(University of Durham, UK)*
15.30-16.00	**Application of solar energy systems in Georgia by example of high mountainous region of Tusheti** **Kote Kobakhidze** *(Georgian Technical University, Tbilisi, Georgia)*
16.00-16.30	***Coffee / tea break***
16:30-17:00	**Excursion in Georgian Technical University**

Excursion to the ancient capital of Georgia, beautiful city of Mtskheta; wine testing

Dinner – famous national food by the river banks

Friday 21 September 2012

10.00-13.00 **Morning Session:**

10.00-10.30 **Thermodynamic model of the macroscopically ordered exciton state**
Sergey Andreev
(University of Montpellier 2, CNRS, France)

10.30-11.00 **Zero-energy guided modes, vortices and excitons in graphene**
Mikhail Portnoi
(University of Exeter, UK)

11.00-11.30 **Co-Production of ethanol, hydrogen and methane by fermentation of herbaceous cellulosic wastes by anaerobic cellulolytic and saccharolytic thermophilic Clostridia**
Tamara Dudauri
(Georgian Technical University, Tbilisi, Georgia)

11.30-12.00 ***Coffee / Tea Break***

12.00-12.30 **Study of the Ga-As solar cell temperatures for solar radiation degree concentrator with different method of solar cell cooling system**
Irakli Avaliani
(Georgian Technical University, Tbilisi, Georgia)

12.30-13.00 **Spintromechanics of Magnetic Shuttle Sructures**
Robert Shekhter
(University of Gothenburg, Sweden)

13.00-14.30 ***Lunch***

14.00-16.00 **Afternoon Session:**

14.30-15.00 **The fine structure of excitons and trions in trigonal quantum dots**
Mikhail Durnev
(St-Petersburg State University, SOLAB, Russia)

15.00-15.30 **"Scientific and technical aspects of Wind Energy and level of international development"**
Archil Zedgenidze; Manana Gelovani
(Georgian Technical University, Tbilisi, Georgia)

15.30-**16.00** **Electroless deposition of metals and alloys for new challenges in nanotechnology, electronics and catalysis**
Teimuraz N. Khoperia
(Georgian Technical University)

16.00-16.30 ***Coffee / tea break***

16.30-17:30 ***Poster Session:***

Optically induced nuclear spin transitions in GaAs/InGaAs quantum dots
M. S. Kuznetsova; R.V. Cherbunin; I.V. Ignatiev; I.Ya. Gerlovin; M.Yu. Petrov; S.Yu. Verbin
(*Saint-Petersburg State University, Russia*)
K. Flisinski; M. Bayer
(*Technische Universität Dortmund, Germany*)
D.R. Yakovlev
(Technische Universität Dortmund, Germany; Ioffe Physico-Technical Institute RAS, St-Petersburg).

Numerical simulation of polariton spin transport in 2D microcavity channel
M.Yu. Petrov *(Saint Petersburg State Unversity, Russia)*

A.V. Kavokin *(Saint Petersburg State Unversity, Russia; University of Southampton, UK)*

Nuclear spin-lattice relaxation in metallic phase of n-GaAs
M. Kotur, R.I. Dzhioev, K.V. Kavokin, V.L. Korenev, B.R. Namozov, P.E. Pak
(A.F. Ioffe Physico-Technical Institute, St. Petersburg, Russia)

Photovoltaie installations with sunlight concentrators
Gela Goderdzishvili
(Georgian Technical University, Tbilisi, Georgia)

19.00 ***School Banquet, National Georgian Cuisine, wine testing, dancing hall***

Saturday 22 September 2012

10:00 - full-day excursion: Kakheti, the capital of Georgian wine - wine factory, with wine degustation, vintage (grape picking), including Signagi, medieval fortified town, also called "love city"

Sunday 23 September 2012

Departure of the participants