

**5th BIATRI workshop**  
**April 17th-18th 2023**  
**HiLASE Centre**

| Day 1  |          |             |                 |   |  |
|--|----------|-------------|-----------------|---|--|
| 10:00:00   | 10:25:00 | 1           | Opening message | Nadezhda M. Bulgakova<br>(HiLASE Centre - Czech Republic)                   | BIATRI project: status, main achievements, further perspectives  |
| <b>Session: Fundamental &amp; ultrafast phenomena -- Chairman: Bulgakova N. M.</b> |          |             |                 |   |  |
| 10:25:00   | 10:50:00 | 2           |                 | Martin Kozak<br>(Charles University, Czech Republic)                        | Coherent two-color control of high harmonic generation in silicon and attosecond interferometry  |
| 10:50:00   | 11:15:00 | 3           |                 | Olga Fedotova (Scientific – Practical Materials Research Centre, Belarus)   | On the spatio-temporal localization of intense femtosecond pulses in Kerr media under nonadiabatic tunnel ionization                   |
| 11:15:00   | 11:40:00 | 4           |                 | Oleg Romanov<br>(Bielorussian State University)                             | Acousto-phonic nanostructures based on multilayer graphene for ultrafast modulation of optical radiation" (O.Romanov, I. Timoshchenko) |
| 11:40:00   | 12:40:00 | Lunch break |                 |   |  |
| <b>Session: Fundamental &amp; ultrafast phenomena II -- Chairman: Levy Y.</b>      |          |             |                 |   |  |
| 12:40:00   | 13:05:00 | 5           |                 | Franco Bonafe<br>(Max Planck for Structure and Dynamics of matter, Germany) | Fully-atomistic dynamics of plasmonic nanosystems within the Maxwell-TDDFT first principles framework                                  |
| 13:05:00   | 13:30:00 | 6           |                 | Andres Bertoni<br>(University of Cuyo, Argentina)                           | Simulating the optical response of molecular systems and materials with DFTB   |
| 13:30:00   | 13:55:00 | 7           |                 | Kristyna Gazdova<br>(HiLASE Centre - Czech Republic)                        | Linear absorption of graphene flakes using DFTB  |
| 13:55:00   | 14:20:00 | 8           |                 | Thibault J.-Y. Derrien<br>(HiLASE Centre - Czech Republic)                  | First principle modeling of laser interaction with materials: symmetry breaking in laser damage conditions                             |
| 14:20:00   | 14:40:00 | Break       |                 |   |  |
| <b>Session Laser processing and applications I -- Chairman: Derrien T. J.-Y.</b>   |          |             |                 |   |  |
| 14:40:00   | 15:05:00 | 9           |                 | Vladimir Zhukov<br>(HiLASE Centre - Czech Republic)                         | Nonlinear Maxwell's modeling of laser-glass interaction in ultrafast laser irradiation regimes   |
| 15:05:00   | 15:30:00 | 10          |                 | Martin Zukerstein<br>(HiLASE Centre - Czech Republic)                       | Time-resolved volumetric modification in fused silica reveals ultrafast electron dynamics and shielding                                |
| 15:30:00   | 15:55:00 | 11          |                 | Juraj Sladek<br>(HiLASE Centre - Czech Republic)                            | Regular patterning of bulk Si with laser induced periodic surface structures   |
| 15:55:00   | 16:20:00 | 12          |                 | Krystof Hlinomaz<br>(HiLASE Centre - Czech Republic)                        | Thin film modification by pulsed lasers: thickness as a tuning parameter?  |
| 16:20:00   | 16:40:00 | Break       |                 |   |  |
| <b>Session Laser processing and applications II -- Chairman: Mirza I.</b>          |          |             |                 |   |  |
| 16:40:00   | 17:05:00 | 13          |                 | Yoann Levy<br>(HiLASE Centre - Czech Republic)                              | Spot size effect on the regularity of periodic surface structures on Silicon   |
| 17:05:00   | 17:30:00 | 14          |                 | Sergei Lizunov<br>(HiLASE Centre - Czech Republic)                          | Melting of gold by ultrashort laser pulses: advanced two-temperature modeling and comparison with surface damage experiments           |
| 17:30:00   | 17:55:00 | 15          |                 | Jiri Beranek<br>(HiLASE Centre - Czech Republic)                            | On the melting thresholds of semiconductors under nano-second pulse laser irradiation  |

| Day 2  |          |             |  |   |   |
|--|----------|-------------|--|---|---|
| Session Nanomaterials I: synthesis, characterization, applications -- Flimelova M.       |          |             |  |   |   |
| 10:00:00   | 10:25:00 | 1           |  | Nathan Goodfriend<br>(HiLASE Centre - Czech Republic)     | Micro- and nanomaterial positioning with laser induced forward transfer   |
| 10:25:00   | 10:50:00 | 2           |  | Jan Hrabovsky<br>(HiLASE Centre - Czech Republic)         | Boron doped diamonds - Ellispometry and laser modification of surfaces  |
| 10:50:00   | 11:15:00 | 3           |  | Inam Mirza<br>(HiLASE Centre - Czech Republic)            | On the sliding of steel surfaces fabricated with LIPSS on different kinds of snow                                   |
| 11:15:00   | 11:35:00 | Break       |  |   |   |
| Session Nanomaterials II: synthesis, characterization, applications -- Chairman: Levy Y. |          |             |  |   |   |
| 11:35:00   | 12:00:00 | 4           |  | Alexander Bulgakov<br>(HiLASE Centre - Czech Republic)    | Time-of-flight mass spectrometry of ultrashort-laser-produced particles   |
| 12:00:00   | 12:25:00 | 5           |  | Wladimir Marine<br>(HiLASE Centre - Czech Republic)       | Doped nanosized ZnO: Laser-assisted synthesis and properties  |
| 12:25:00   | 12:50:00 | 6           |  | Alexander Gatsa<br>(HiLASE Centre - Czech Republic)       | New approach in upscaling of nanoparticle production by laser ablation in liquids                                   |
| 12:50:00   | 13:50:00 | Lunch break |  |   |   |
| Session Bio-photonics -- Chairman: Bulgakov A.V.   |          |             |  |   |   |
| 13:50:00   | 14:15:00 | 7           |  | Mirka Flimelova<br>(HiLASE Centre - Czech Republic)       | A facile route of manufacturing and improvement of plasmonic nanostructures towards magnetic resonance applications |
| 14:15:00   | 14:40:00 | 8           |  | Vanina Chiarpoti<br>(University of Cuyo, Argentina)       | Adsorption and Insertion in Cyclic Peptides on Self-Assembled Lipid Membranes: a Molecular Theory                   |
| 14:40:00   | 15:05:00 | 9           |  | Yury Ryabchikov<br>(HiLASE Centre - Czech Republic)       | Synthesis, characterisation and application of single- and multi-component semiconductor nanostructures             |
| 15:05:00   | 15:25:00 | Break       |  |   |   |
| Discussion session   |          |             |  |   |   |
| 15:25:00   | 15:50:00 | 10          |  | All participants  | Lasers in material science: Future perspectives   |
| 15:50:00   | 16:15:00 | 11          |  | Nadezhda M. Bulgakova<br>(HiLASE Centre - Czech Republic) | Closing words   |