


Researcher profile (portfolio) form for potential research supervisors of postgraduate track participants in the Global Universities Association International Olympiad for graduate and postgraduate applicants 2023-2024.

University	Tomsk Polytechnic University
English language proficiency	C1
Applicant's postgraduate program	2.2.8 Methods and devices for monitoring and diagnostics of materials, products, substances and the natural environment 2.2.12. Devices, systems and medical products 2.6.6. Nanotechnology and nanomaterials
List of research projects of a potential research supervisor (participation/leadership)	<ul style="list-style-type: none"> • Nanotechnology and nanomaterials • Sustainable materials and energy solutions
List of possible research topics	<ul style="list-style-type: none"> • Soft robotics • Flexible electronic materials for energy applications
 <p>Research supervisor: Raul D. Rodriguez, Ph.D. (Sorbonne University, Paris, France)</p>	<p>The direction of the international map of science Engineering and Technology 2.05. Materials Technology, Materials Science – interdisciplinary</p>
	<p>Interaction of laser radiation with matter, including in super-strong fields</p>
	<p>Supervisor's research interests (detailed description of research interests):</p> <p><i>Professor Rodriguez's work is a captivating exploration into the world of nanomaterials. Imagine diving into the exciting realm of lasers and their transformative effects on nanomaterials and their blends. This forms the fascinating foundation for creating innovative graphene-based composites, which have boundless applications, from revolutionizing biomedicine to propelling us into the future of energy solutions.</i></p> <p><i>But that's not all! Professor Rodriguez's research uncovers the enchanting world of plasmonic nanomaterials. Picture them as tiny, powerful antennas that harness the magic of light at the tiniest scales, boosting the power of optical spectroscopy. These incredible materials aren't just confined to the lab; they have the potential to reshape the fields of nanospectroscopy and nanoelectronics, offering a world of possibilities for budding scientists like you!</i></p>
	<p>Research highlights (if applicable):</p> <p><i>Specify the key highlights of the program that make it stand out from others. (Use of unique equipment, collaboration with foreign scientists and research centers, financial support for graduate students, etc.)</i></p> <ul style="list-style-type: none"> • Cutting-Edge Infrastructure: Our program boasts a one-of-a-kind experimental infrastructure dedicated to nanoanalysis. With state-of-the-art equipment, including tip-enhanced Raman spectroscopy and advanced atomic force microscopy tools, you'll have access to cutting-edge technology that's not available elsewhere.

- **International Collaborations:** We actively collaborate with esteemed foreign scientists and research centers. This global network offers you the opportunity to work alongside leading experts in your field, broadening your research horizons.
- **Financial Support:** We understand the importance of supporting our graduate students. That's why we offer financial assistance to help you focus on your research without financial worries.
- **Scalable Innovation:** Our research program is at the forefront of laser-induced composite formation for flexible electronics. This groundbreaking approach is not only innovative but also scalable, with the potential to impact various industries. Join us and be part of pioneering advancements that will shape the future.

Supervisor's specific requirements:

This section is to be filled out if there are any requirements to a graduate student (required background/courses completed/ methods learned/ specific software knowledge and skills, etc.)

- **Dedication to Lifelong Learning:** Our ideal candidate should have an insatiable thirst for knowledge and a genuine passion for continuous learning. In our dynamic research environment, staying up-to-date with the latest advancements is essential.
- **Drive for Improvement:** We value individuals who are committed to self-improvement and personal growth. You should constantly seek ways to enhance your skills and contribute to the research team's development.
- **Active Participation:** As a member of our young and dynamic research team, active engagement is key. We encourage candidates who thrive in a collaborative environment and are eager to share their insights and ideas.
- **Ambitious Goals:** Our team is on a mission to become one of the leading research groups globally. We're looking for individuals who share this ambition and are ready to contribute to our collective success.

Supervisor's main publications (specify a total number of publications in journals indexed by Web of Science, Scopus, RSCI for the last 5 years, list up to 5 most significant publications with the publication details):

Over 60 publications for the last 5 years

- Cover: Lipovka et al., 2023. Textile Electronics with Laser-Induced Graphene/Polymer Hybrid Fibers. ACS Appl. Mater. Interfaces. (IF 9.5)
- Cover: Lipovka et al., 2022. Photoinduced flexible graphene/polymer nanocomposites: Design, formation mechanism, and properties engineering. Carbon., 194 (154-161). (IF 9.594)

	<ul style="list-style-type: none"> • <u>Cover: Rodriguez et al., 2021. Ultra-Robust Flexible Electronics by Laser-Driven Polymer-Nanomaterials Integration. Advanced functional materials, 31, 2008818. (IF 18.808)</u> • <u>Cover: Rodriguez et al., 2020. Beyond graphene oxide: Laser engineering functionalized graphene for flexible electronics. Materials Horizons, 7(4), 1030-1041. (IF 12.319)</u>
	<p>Results of intellectual activity <i>Patent for invention № 2785547 "METHOD FOR PRODUCING COMPOSITE FILMS BASED ON ASPHALTENES"</i></p>

