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| University  | Peter the Great St.Petersburg Polytechnic University  |
| Level of English proficiency  | Intermediate (B1)   |
| Educational program and field of the educational program for which the applicant will be accepted   | BIOLOGY & BIOTECHNOLOGY<br>1.5.6. Biotechnology   |
| List of research projects of the potential supervisor (participation/leadership)  | <ol style="list-style-type: none"> <li>1. Federal target program on the topic: "Development and implementation of innovative biotechnologies for the processing of microalgae <i>Chlorella sorokiniana</i> and duckweed <i>Lemna minor</i>" (application code "2017-14-588-0003-014") (executor)</li> <li>2. Grant of Ministry of Science and Higher Education of the Russian Federation as part of World-class Research Center program: Advanced Digital Technologies (contract No. 075-15-2020-934 dated by 17.11.2020) (responsible executor)</li> <li>3. Grant of The Ministry of Science and Higher Education of the Russian Federation under the strategic academic leadership program 'Priority 2030' (Agreement 075-15-2021-1333, dated 30 September 2021), (responsible executor)</li> <li>4. Research and development work (R&amp;D) on the topic: "Development of technology for obtaining sorption materials from waste of the agro-industrial complex" (responsible executor)</li> <li>5. Project "Blue Sky Research - Artificial Intelligence in the agro-industrial complex and food industry" (head)</li> </ol> |
| List of the topics offered for the prospective scientific research  | Development of sorption materials from vegetable raw materials for the extraction of heavy metal ions and oil products, extraction of valuable components from aquaculture, complex processing of secondary resources.  |
|  <p>Research supervisor:<br/>Vyacheslav P. Shkodyrev,<br/>Doctor of Science, Professor</p> | 1.06. Biological sciences   |
|   | Supervisor's research interests<br>Biosorbents, aquaculture, vegetable raw materials  |
|   | <p>Research highlights</p> <ul style="list-style-type: none"> <li>• Unique research-education networks laboratory of artificial intelligence and industrial cyber-physical systems.</li> <li>• Close cooperation with Russian and international industry</li> </ul>   |
|   | <p>Supervisor's specific requirements:</p> <ul style="list-style-type: none"> <li>• Mathematical background in mathematics, neuro-informatics, programming.</li> <li>• Ability of software engineering in Java</li> </ul>   |
|   | <p>Supervisor's main publications</p> <ol style="list-style-type: none"> <li>1. Recovery of Polyphenolic Compounds and Vitamins from the Stinging Nettle Leaves: Thermal and Behavior and Biological Activity of Obtained Extracts Đurović, S., Micić, D., Šorgić, S., ...Blagojević, S., Zeković, Z. <i>Molecules</i> this link is disabled, 2023, 28(5), 2278</li> <li>2. Recovery of Biologically Active Compounds from Stinging Nettle Leaves Part II: Processing of Exhausted Plant Material after Supercritical Fluid Extraction Đurović, S., Pezo, L., Gašić, U., ...Smyatskaya, Y.A., Zeković, Z. <i>Foods</i>, 2023, 12(4), 809</li> </ol>   |

3. Obtaining Fat-Soluble Pigments—Carotenoids from the Biomass of *Chlorella* Microalgae Bazarnova, J., Smyatskaya, Y., Shlykova, A., Balabaev, A., Đurović, S. *Applied Sciences* (Switzerland), 2022, 12(7), 3246

4. The effect of various extraction techniques on the quality of sage (*Salvia officinalis* L.) essential oil, expressed by chemical composition, thermal properties and biological activity Đurović, S., Micić, D., Pezo, L., ...Smyatskaya, Y.A., Blagojević, S. *Food Chemistry*: X, 2022, 13, 100213

5. Influence of the mowing and drying on the quality of the peppermint (*Mentha x piperita* L.) essential oil: Chemical profile, thermal properties, and biological activity Đurović, S., Micić, D., Pezo, L., ...Smyatskaya, Y.A., Blagojević, S. *Industrial Crops and Products* [this link is disabled](#), 2022, 177, 114492

6. Use of microalgae biomass for fortification of food products from grain Bazarnova, J., Nilova, L., Trukhina, E., ...Smyatskaya, Y., Aktar, T. *Foods*, 2021, 10(12), 3018

7. Microalgae biotechnology multiple use of *Chlorella sorokiniana* Politaeva, N.A., Smyatskaya, Y.A., Dolbnya, I.V., Sobgaida, D.S. *Advances in Raw Material Industries for Sustainable Development Goals*, 2021, pp. 252–261

8. Production of Sorbents from Residual Biomass of *Chlorella Sorokiniana* Microalgae and *Lemna Minor* Duckweed Politaeva, N.A., Smyatskaya, Y.A., Efremova, S.Y. *Chemical and Petroleum Engineering* [this link is disabled](#), 2020, 56(7-8), pp. 543–547

9. Influence of the nature of the binding material on properties of the sorbents Smyatskaya, Y., Politaeva, N., Chusov, A. *IOP Conference Series: Materials Science and Engineering*, 2020, 883(1), 012193

10. Development of Full-Cycle Utilization of *Chlorella sorokiniana* Microalgae Biomass for Environmental and Food Purposes Politaeva, N., Smyatskaya, Y., Al Afif, R., Pfeifer, C., Mukhametova, L. *Energies* [this link is disabled](#), 2020, 13(10), 2648.

**METHOD OF DIRECTED CULTIVATION OF BIOMASS OF MICROALGAE CHLORELLA SOROKINIANA**

Aronova Ekaterina Borisovna, Bazarnova Yulia Genrikhovna, Smyatskaya Yulia Alexandrovna

Patent for invention 2758355 C1, 10/28/2021. Application No. 2021109499 dated 04/06/2021.

• **METHOD FOR OBTAINING BIOGAS**

Politaeva N.A., Smyatskaya Yu.A., Atamanyuk I.

Patent for invention RU 2714815 C1, 02/19/2020. Application No. 2019124500 dated 08/01/2019.

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|  | <ul style="list-style-type: none"> <li>• <b>METHOD OF OBTAINING SORPTION MATERIALS</b><br/> Politaeva N.A., Smyatskaya Yu.A., Dolbnya I.V.<br/> Patent for invention RU 2708860 C1, 12/11/2019. Application No. 2019117868 dated 06/07/2019.</li> <li>• <b>METHOD FOR OBTAINING PIGMENT COMPLEX FROM BIOMASS OF SINGLE-CELLULAR ALGAE OF THE GENUS CHLORELLA</b><br/> Bazarnova Yu.G., Kuznetsova T.A., Smyatskaya Yu.A.<br/> Patent for invention RU 2695879 C1, 07/29/2019. Application No. 2018142406 dated 12/01/2018.<br/> Bazarnova Yu.G., Kuznetsova T.A., Smyatskaya Yu.A.<br/> Patent for invention RU 2695879 C1, 07/29/2019. Application No. 2018142406 dated 12/01/2018.</li> <li>• <b>METHOD FOR EXTRACTING LIPIDS FROM MICROALGAE CHLORELLA SOROKINIANA</b><br/> Politaeva N.A., Smyatskaya Yu.A., Trukhina E.V.<br/> Patent for invention RU 2694405 C1, 07/12/2019. Application No. 2018142404 dated 12/01/2018.</li> <li>• <b>METHOD OF CULTIVATION OF MICROALGAE CHLORELLA</b><br/> Politaeva N.A., Bazarnova Yu.G., Smyatskaya Yu.A., Kuznetsova T.A., Trukhina E.V.<br/> Patent for invention RU 2668162 C1, 09/26/2018. Application No. 2017142638 dated 12/06/2017.</li> </ul> |
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