


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.

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| University | National Research Tomsk Polytechnic University |
| Level of English proficiency | C1 |
| Educational program and field of the educational program for which the applicant will be accepted | 2.6.13 Processes and apparatuses of chemical technologies |
| List of research projects of the potential supervisor (participation/leadership) | Development of the approach to the modelling of heavy petroleum feedstock hydrogenation processes by the example of hydrocracking process (grant of Russian Science Foundation, supervisor), 2022-2024. |
| List of the topics offered for the prospective scientific research | <ol style="list-style-type: none"> 1. Development of a mathematical model for the process of hydrocracking of heavy oil feedstock 2. Development of a mathematical model for the process of hydrodewaxing of oil feedstock 3. Modelling of hydrocracking catalyst deactivation 4. Modelling of hydrodewaxing catalyst deactivation |
| <div style="text-align: center;">  </div> <p>Research supervisor: Natalya S. Belinskaya, Candidate of Science (TPU)</p> | Engineering and Technology, ENGINEERING, CHEMICAL |
| | Supervisor's research interests (detailed description of research interests): |
| | <ul style="list-style-type: none"> • Thermodynamics, kinetics, mechanisms of reactions of petroleum hydroprocesses (hydrodewaxing, hydrocracking) • Deactivation of catalysts of petroleum hydroprocesses (hydrodewaxing, hydrocracking) • Mathematical modelling and optimization of petroleum hydroprocesses (hydrodewaxing, hydrocracking) • Production and exploitation of motor fuels • Development and application of computer modelling systems of petroleum refining processes |
| | Research highlights (if applicable): – |
| | Supervisor's specific requirements: Proficiency in any programming language is desirable |
| | 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): |
| | <ul style="list-style-type: none"> • Total number of publications in journals indexed by Web of Science – 10, Scopus – 37. <p>Most significant publications:</p> <ul style="list-style-type: none"> • Belinskaya N.S., Lutsenko A.S., Mauzhigunova E.N., Afanaseva D.A., Ivanchina E.D., Ivashkina E.N. Development of the approach to the modeling of the destructive catalytic hydroprocesses of atmospheric and vacuum distillates conversion. The case of oil distillates |

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| | <p>hydrodewaxing process // Catalysis Today. – 2021. – Vol. 378. – P. 219-230.</p> <ul style="list-style-type: none"> • Ivanchina E.D., Ivashkina E.N., Dolganova I.O., Belinskaya N.S. Mathematical modeling of multicomponent catalytic processes of petroleum refining and petrochemistry // Reviews in Chemical Engineering. – 2021. – Vol. 37. – Issue 1. – P. 163-192. • Ivanchina E.D., Ivashkina E.N., Chuzlov V.A., Belinskaya N.S., Dementyev A.Y. Formation of the component composition of blended hydrocarbon fuels as the problem of the multi-objective optimization // Chemical Engineering Journal. – 2020. – Vol. 383. – Article number 121283. • Belinskaya N.S., Frantsina E.V., Ivanchina E.D. Unsteady-state mathematical model of diesel fuels catalytic dewaxing process // Catalysis Today. – 2019. – Vol. 329. – P. 214–220. • Belinskaya N., Altynov A., Bogdanov I., Popok E., Kirgina M., Simakov D. Production of gasoline using stable gas condensate and zeoforming process products as blending components // Energy & Fuels. – 2019. – Vol. 35(5). – P. 4202–4210. |
| | <p>Intellectual property rights:</p> <ul style="list-style-type: none"> • Computer program No. 2021660870 “Computer modeling system for vacuum oil distillate hydrocracking process”. Authors: Belinskaya N.S., Bykova V.V., Afanas'eva D.A. July 02, 2021. • Computer program No. 2021660962 “Computer modeling system for the process of isodewaxing of diesel fractions” Authors: Belinskaya NS, Bykova VV, Afanas'eva DA. July 05, 2021. |