NASTAVNO-NAUČNOM VEĆU
TEHNOLOŠKO-METALURŠKOG FAKULTETA
UNIVERZITETA U BEOGRADU

Odlukom Nastavno-naučnog veća Tehnološko-metalurškog fakulteta Univerziteta u Beogradu od 24.09.2020. godine, imenovani smo u Komisiju za ocenu ispunjenosti uslova za izbor dr Stoje Milovanović u zvanje VIŠI NAUČNI SARADNIK u oblasti Tehničko-tehnoloških nauka.
Na osnovu pregleda i analize dostavljenog materijala i uvida u dosadašnji rad dr Stoje Milovanović, a u skladu sa Zakonom o naučno-istraživačkoj delatnosti i Pravilnikom o postupku i načinu vrednovanja, i kvantitativnom iskazivanju naučno-istraživačkih rezultata istraživača, podnosimo sledeći

I Z V E Š T A J

1. OPŠTI BIOGRAFSKI PODACI

Dr Stoja L. Milovanović je rođena 31. marta 1982. godine u Beogradu. Tehnološko-metalurški fakultet, Univerziteta u Beogradu, smer Biohemijsko inženjerstvo i biotehnologija, koji je upisala šk. 2001/2002. godine, završila je šk. 2009/2010. godine sa prosečnom ocenom 8,06. Diplomski rad na temu „Kinetika ekstrakcije aktivnih komponenti lavande, timijana, divizme i origana i njihovo antibakterijsko dejstvo" pod rukovodstvom mentora prof. dr Irene Žižović odbranila je sa ocenom 10. Doktorske studije na Tehnološko-metalurškom fakultetu, Univerziteta u Beogradu, na smeru Hemijsko inženjerstvo, obima 180 ESPB, upisala je školske 2010/2011. godine. Ispite doktorskih studija, predviđene planom i programom nastave, položila je sa prosečnom ocenom 9,83. U toku studija dodatno se usavršavala u okviru intenzivnog kursa "High Pressure Technology – From Basics to Industrial Applications" koji je održan jula 2011. godine u Beogradu, na kom je sve ispite položila ocenom A (5 ESPB). Završni ispit pod nazivom „Određivanje rastvorljivosti timola u natkritičnom ugljenik(IV)-oksidu i impregnacija biodegradabilnih nosača timolom" odbranila je 2012. godine. Doktorsku disertaciju pod nazivom „Impregnacija timola na čvrste nosače natkritičnim ugljenik(IV)-oksidom" odbranila je 03.07.2015. pod mentorstvom prof. dr Irene Žižović na Tehnološko-metalurškom fakultetu, Univerziteta u Beogradu i time stekla zvanje doktor nauka - tehnološko inženjerstvo.

Stoja Milovanović je od januara 2011. do decembra 2019. godine, bila angažovana na projektu Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije III45017 „Funkcionalni fiziološki aktivni biljni materijali sa dodatnom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji". Od februara 2011. godine je zaposlena kao istraživač pripravnik, kao istraživač saradnik od maja 2012. godine, i zatim kao naučni saradnik od juna 2016. godine na Tehnološko-metalurškom fakultetu, Univerziteta u Beogradu. Dodatno, bila je angažovana u realizaciji bilateralnog projekta "Novel experimental techniques for measuring thermodynamic properties of polymers under high pressure, relevant for impregnation and foaming with supercritical fluids" u saradnji sa Mašinskim fakultetom Univerziteta u Bohumu, Nemačka u periodu 2016-2017. godine i međunarodnog projekta Eureka (E!9906 COMPLANT) "Comprehensive processing of plant extracts for high value added products" u periodu 2016-2018. godine. Trenutno je angažovana u realizaciji međunarodnog projekta Eureka (E!12689 SCIMPLANT) "Phytopreparations - natural materials with supercritical extracts for controlled release of

active components" u periodu 2019-2021. godine. Dodatno, Dr Stoja Milovanović učestvuje u realizaciji projekta Evropske kooperacije u Nauci i Tehnologiji (COST) pod nazivom "Advanced Engineering and Research of aeroGels for Environment and Life Sciences" broj CA18125 u periodu 2019-2023. godine kao zamenik člana upravnog odbora i "Green Chemical Engineering Network towards upscaling sustainable processes" broj CA18224 u periodu 2019-2023. godine kao član upravnog odbora. Dr Stoja Milovanović je član Srpskog hemijskog društva i Američkog hemijskog društva (engl. American Chemical Society). Dr Stoja Milovanović je učestvovala u izradi eksperimentalnog dela više završnih, diplomskih, master i doktorskih radova u periodu od 2011. godine do danas. Aktivno je učestvovala u promociji fakulteta i tehnoloških nauka na Međunarodnom sajmu tehnike u Beogradu i promociji srednjoškolcima kroz tehnološku studiju slučaja "Tech Case Study".

Oblast naučnog rada Dr Stoje Milovanović je hemijsko inženjerstvo. Rezultati njenog naučno-istraživačkog rada objavljeni su u knjigama međunarodnog značaja (M14 - dva poglavlja), u međunarodnim knjigama (bez kategorije - dva poglavlja), vrhunskim međunarodnim časopisima izuzetnih vrednosti (M21a - dva rada), vrhunskim međunarodnim časopisima (M21 - šesnaest radova), istaknutim međunarodnim časopisima (M22 - četiri rada), međunarodnim časopisima (M23 - četiri rada), časopisu međunarodnog značaja verifikovanog posebnom odlukom (M24 - jedan rad), vrhunskom časopisu nacionalnog značaja (M51 - dva rada) i istaknutom časopisu nacionalnog značaja (M52 - jedan rad). Takođe, saopštila je više radova na naučnim skupovima međunarodnog značaja (M33 - devet radova i M34 - dvadesetdva rada) i nacionalnog značaja (M63 - jedan rad). Pored navedenog, autor ili koautor je četiri tehnička rešenja (M84 - jedno i M85 - tri) i pet patenta (M92 – četiri i M93 - jedan).

2. PREGLED DOSADAŠNJEG NAUČNOG I STRUČNOG RADA

Dosadašnji naučni i stručni rad dr Stoje Milovanović obuhvata objavljene naučne radove, saopštenja na naučnim skupovima, tehnička rešenja i patente u periodu 2011-2020. godine. Posebno su izdvojeni radovi od izbora u zvanje viši naučni saradnik (period 2016-2020). Klasifikacija naučnih rezultata izvršena je prema Pravilniku o postupku i načinu vrednovanja i kvantitativnom iskazivanju naučno-istraživačkih rezultata istraživača ("Sl. glasnik RS" br. 24/2016, 21/2017 i 38/2017).

2.1. SPISAK OBJAVLJENIH RADOVA PRE IZBORA U ZVANJE NAUČNI SARADNIK

Poglavlje u knjizi M12 (M_{14} = 4)

1. J. Ivanovic, **S. Milovanovic**, M. Stamenic, M. A. Fanovich, P. Jaeger, I. Zizovic, Application of an Integrated Supercritical Extraction and Impregnation Process for Incorporation of Thyme Extracts into Different Carriers, Ed. J. Osborne, Handbook on Supercritical Fluids, Fundamentals, Properties and Applications, Nova Science Publishers, Hauppauge, NY, 2014, pg. 257-280 (ISBN: 978-1-63321-930-4; ISBN: 978-1-63321-946 eBook). Broj heterocitata = 2

Rad u međunarodnom časopisu izuzetnih vrednosti (M_{21a} = 10)

2. **S. Milovanovic**, D. Markovic, K. Aksentijevic, D. B. Stojanovic, J. Ivanovic, I. Zizovic, Application of cellulose acetate for controlled release of thymol, Carbohydrate Polymers 147 (2016) 344–353 (ISSN: 0144-8617; DOI: 10.1016/j.carbpol.2016.03.093; IF_{2016}=4.811; 8/86 Polymer Science). Broj heterocitata = 33

Rad u vrhunskom međunarodnom časopisu (M_{21} = 8)

3. N. V. Petrovic, S. S. Petrovic, A. M. Dzamic, A. D. Ciric, M. S. Ristic, **S. L. Milovanovic**, S. D. Petrovic, Chemical composition, antioxidant and antimicrobial activity of Thymus praecox supercritical extracts, Journal of Supercritical Fluids 110 (2016) 117–125 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2016.01.001; IF_{2016}=2.991; 29/135 Engineering, Chemical). Broj heterocitata = 10
4. A. Bogdanovic, V. Tadic, I. Arsic, **S. Milovanovic**, S. Petrovic, D. Skala, Supercritical and high pressure subcritical fluid extraction from lemon balm (*Melissa officinalis* L., Lamiaceae), Journal of Supercritical fluids 107 (2016) 234-242 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2015.09.008; IF_{2016}=2.991; 29/135 Engineering, Chemical). Broj heterocitata = 14
5. J. Ivanovic, S. Knauer, A. Fanovich, **S. Milovanovic**, M. Stamenic, P. Jaeger, I. Zizovic, R. Eggers, Supercritical CO_2 sorption kinetics and thymol impregnation of PCL and PCL-HA, Journal of Supercritical fluids 107 (2016) 486-498 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2015.07.001 IF_{2016}=2.991; 29/135 Engineering, Chemical). Broj heterocitata = 25
6. D. Markovic, **S. Milovanovic**, M. Radetic, B. Jokic, I. Zizovic, Impregnation of corona modified polypropylene non-woven material with thymol in supercritical carbon dioxide for antimicrobial application, The Journal of Supercritical Fluids 101 (2015) 215-221 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2015.03.022; IF_{2015}=2.579; 33/135 Engineering, Chemical). Broj heterocitata = 24
7. **S. Milovanovic**, M. Stamenic, D. Markovic, J. Ivanovic, I. Zizovic, Supercritical impregnation of cellulose acetate with thymol, The Journal of Supercritical Fluids 97 (2015) 107-115 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2014.11.011; IF_{2015}=2.579; 33/135 Engineering, Chemical). Broj heterocitata = 29
8. **S. Milovanovic**, M. Stamenic, D. Markovic, M. Radetic, I. Zizovic, Solubility of thymol in supercritical carbon dioxide and its impregnation on cotton gauze, The Journal of Supercritical Fluids 84 (2013) 173-181 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2013.10.003; IF_{2013}=2.571; 27/135 Engineering, Chemical). Broj heterocitata = 35
9. S. Maksimovic, Z. Kesic, I. Lukic, **S. Milovanovic**, M. Ristic, D. Skala, Supercritical fluid extraction of curry flowers, sage leaves, and their mixture, The Journal of Supercritical Fluids 84 (2013) 1-12 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2013.09.003; IF_{2013}=2.571; 27/135 Engineering, Chemical). Broj heterocitata = 14
10. F. Meyer, P. Jaeger, R. Eggers, M. Stamenic, **S. Milovanovic**, I. Zizovic, Effect of CO_2 pre-treatment on $scCO_2$ extraction of natural material, Chemical Engineering and Processing 56 (2012) 37-45 (ISSN: 0255-2701; DOI: 10.1016/j.cep.2012.02.003; IF_{2012}=1.950; 36/133 Engineering, Chemical). Broj heterocitata = 16

Rad u istaknutom međunarodnom časopisu (M_{22} = 5)

11. J. Ivanovic, **S. Milovanovic**, I. Zizovic, Utilization of supercritical CO2 as a processing aid in setting functionality of starch-based materials, Starch/Stärke 68 (2016) 1-13 (ISSN: 0038-9056; DOI: 10.1002/star.201500194; IF_{2016}=1.837; 51/130 Food Science & Technology). Broj heterocitata = 19
12. **S. Milovanovic**, I. Jankovic-Castvan, J. Ivanovic, I. Zizovic, Effect of starch xero- and aerogels preparation on the supercritical CO_2 impregnation of thymol, Starch/Stärke 67 (2015) 174-182 (ISSN: 0038-9056; DOI: 10.1002/star.201400134; IF_{2015}=1.523; 58/125 Food Science & Technology). Broj heterocitata = 13

13. M. Stamenic, J. Ivanovic, S. Grujic, **S. Milovanovic**, I. Zizovic, S. Petrovic, Comparative analysis of mathematical models for supercritical extraction simulation from industrially valuable lamiaceae herbs, The Canadian Journal of Chemical Engineering 92 (2014) 75-81 (ISSN:0008-4034; DOI: 10.1002/cjce.21789; IF_{2014}=1.231; 73/134 Engineering, Chemical). Broj heterocitata = 2

Rad u međunarodnom časopisu (M_{23} = 3)

14. S. S. Petrovic, J. Ivanovic, **S. Milovanovic**, I. Zizovic, Comparative analyses of diffusion coefficients for different extraction processes from thyme, Journal of Serbian Chemical Society 77 (2012) 799-814 (ISSN:0352-5139; DOI: 10.2298/JSC110616009P; IF_{2012}=0.912; 100/152 Chemistry, Multidisciplinary). Broj heterocitata = 13

Rad u nacionalnom časopisu međunarodnog značaja (M_{24} = 3)

15. Z. D. Knežević-Jugović, A. B. Stefanović, M. G. Žuža, **S. L. Milovanović**, S. M. Jakovetić, V. B. Manojlović, B. M. Bugarski, Effects of sonication and high-pressure carbon dioxide processing on enzymatic hydrolysis of egg white proteins, Acta Periodica Technologica 43 (2012) 33-41 (YU ISSN: 1450-7188; DOI: 10.2298/APT1243033K; Materials and Chemical technology). Broj heterocitata = 14

Saopštenje sa međunarodnog skupa štampano u celini (M_{33} = 1)

16. R. Kuska, **S. Milovanović**, S. Frerich, I. Zizović, J. Ivanović, Supercritical foaming and impregnation process design based on thermodynamic measurements of PLA under high presure CO_2, 15th European Meeting on Supercritical Fluids, 8-11 May 2016, Essen, Germany, Book of abstracts (V08) 110

17. **S. Milovanovic**, T. Adamovic, K. Aksentijevic, M. Stamenic, J. Ivanovic, I. Zizovic, Impregnation of cellulose acetate with carvacrol using supercritical carbon dioxide, 15th European Meeting on Supercritical Fluids, 8-11 May 2016, Essen, Germany, Book of abstracts (P04) 213

18. D. Marković, **S. Milovanović**, M. Stamenić, B. Jokić, I. Žižović, M. Radetić, The impregnation of corona activated polypropylene non-woven fabric with thymol in supercritical carbon dioxide, 27th Summer School and International Symposium on the Physics of Ionized Gases, SPIG 2014, August 26-29, 2014, Belgrade, Serbia, Contributed papers 419-422

19. **S. Milovanovic**, M. Stamenic, D. Markovic, M. Radetic, I. Zizovic, Solubility of Thymol in Supercritical Carbon Dioxide and its Impregnation on Cotton Gauze, 6th International Symposium on High Pressure Processes Technology, September 8-11, 2013 Belgrade, Serbia, Proceedings (O40-HPFP) 169-173

20. **S. Milovanovic**, J. Ivanovic, M. Pantic, F. Petrovic, I. Zizovic, Supercritical CO_2 Impregnation of Different Polysaccharide-based Polymers with Thymol, 6th International Symposium on High Pressure Processes Technology, September 8-11, 2013, Belgrade, Serbia, Proceedings (P34-HPFP) 280-284

21. S. Maksimovic, Z. Kesic, I. Lukic, **S. Milovanovic**, M. Ristic, D. Skala, SFE of Sage Leaves, Curry Flowers and Their Mixture, 6th International Symposium on High Pressure Processes Technology, September 8-11, 2013 Belgrade, Serbia, Proceedings (P37-HPFP) 298-309

22. A. Bogdanovic, **S. Milovanovic**, V. Tadic, S. Petrovic, I. Zizovic, Supercritical Fluid Extraction from Lemon Balm (*Melissa officinalis*), 6th International Symposium on High Pressure Processes Technology, September 8-11, 2013, Belgrade, Serbia, Book of abstract 106

23. F. Meyer, P. Jaeger, R. Eggers, M. Stamenic, **S. Milovanovic**, I. Zizovic, Effect of CO_2 pre-Treatment on $scCO_2$ Extraction of natural material, The 13th European Meeting on Supercritical Fluids, 9th-12th October, 2011 Hague, CD

Saopštenje sa međunarodnog skupa štampano u izvodu (M_{34} = 0,5)

24. S. Djordjević, Z. Tešić, O. D. Milojković, U. Gašić, A. Pavlović, N. Nedić, **S. Milovanović**, Effect of varius extraction methods on the content of rutin and quercetin in *Saphora japonica* L. 6th International Congress of Aromatic and Medicinal Plants (CIPAM 2016), 29 May – 1 June, Coimbra, Portugal, Book of Abstracts (P73) 156, ISBN: 978-989-95050-1-8

25. R. Kuska, **S. Milovanović**, M. Lučić Škorić, M. Kalagasidis Krušić, S. Frerich, I. Zizović, J. Ivanović, Supercritical solvent impregnation of PLA with thymol, 14th Young researchers' conference, Materials science and engineering, December 9-11, 2015 Belgrade, Serbia, Program and the book of abstracts (4-1) 12, ISBN 978-86-80321-31-8

26. **S. Milovanovic**, J. Ivanovic, D. Markovic, M. Radetic, V. Tadic, I. Zizovic, Incorporation of Thyme and Hop Extracts into Polymer Carriers Using Integrated Supercritical Extraction and Impregnation Process, 14th Young researchers' conference, Materials science and engineering, December 9-11, 2015 Belgrade, Serbia, Program and the book of abstracts (4-2) 13, ISBN 978-86-80321-31-8

27. M. Malićanin, J. Ivanović, **S. Milovanović**, D. Lončarević, V. Ljubić, V. Rac, Lj. Ignjatović, I. Žižović, V. Rakić, The extraction of grape-seed oil from different cultivars using supercritical extraction by carbon dioxide, 7th Central European Congress on Food, 21-24 May 2014, Ohrid, Macedonia. Book of abstracts, Ed. Vladimir Kakurinov, ISBN 978-608-4565-05-5, pp. 214-215

28. **S. Milovanovic**, M. Pantic, J. Ivanovic, I. Zizovic, Optimization of chitosan gel preparation for supercritical impregnation of thymol, 13th Young researchers' conference, Materials science and engineering, December 10-12, 2014 Belgrade, Serbia, Program and the book of abstracts (I/6), ISBN 978-86-80321-30-1

29. **S. Milovanović**, J. Ivanović, I. Žižović, Effect of starch gels preparation on the supercritical impregnation of thymol, 12th Young researchers' conference, Materials science and engineering, December 11-13, 2013 Belgrade, Program and the book of abstracts (II/5) 7, ISBN 978-86-80321-28-8

Rad u vrhunskom časopisu nacionalnog značaja (M_{51} = 2)

30. **S. L. Milovanovic**, R. M. Kuska, M. Lj. Lucic Skoric, M. T. Kalagasidis Krusic, S. Frerich, Irena T. Zizovic, J. Z. Ivanovic, Swelling Kinetics and Impregnation of PLA with Thymol under Supercritical CO2 Conditions, Tehnika 1 (2016) 16-20 UDC: 615.479.4:678.1 (ISSN 0040-2176 *Materials and Chemical technology 2016*)

Rad u istaknutom nacionalnom časopisu (M_{52} = 1,5)

31. **S. Milovanović**, M. Pantić, J. Ivanović, I. Žižović, Uticaj pripreme hitozan gelova na natkritičnu impregnaciju timolom, Tehnika 3 (2015) 391-396 UDC: 615.454.1:678.741 (ISSN 0040-2176 *Materials and chemical technology 2015*)

Saopštenje sa skupa nacionalnog značaja štampano u celini (M_{63} = 0,5)

32. N. V. Babović, M. Lazić, **S. Milovanović**, S. D. Petrović, S. S. Petrović, Supercritical fluid extraction of essential oil from wild thyme (*Thymus serpyllum* L.), 6th Symposium Chemistry and Environmental Protection, 21t-24th May, 2013. Vršac, Serbia, Book of abstract 394-395

Odbranjena doktorska disertacija (M_{70} = 6)

33. Impregnacija timola na čvrste nosače natkritičnim ugljenik(IV)-oksidom, Tehnološko-metalurški fakultet, Univerzitet u Beogradu (2015) UDK broj: 547.563:546.264-31
link: https://fedorabg.bg.ac.rs/fedora/get/o:11588/bdef:Content/get

Bitno poboljšano tehničko rešenje na nacionalnom nivou (M_{84} = 3)
prema važećem Pravilniku Ministarstva što je korišćeno pri bodovanju rezultata kandidatkinje

34. I. Žižović, M. Stamenić, D. Mišić, J. Nišavić, J. Ivanović, **S. Milovanović**, S. Petrović. „Laboratorijski tehnološki postupak dobijanja ekstrakta iz ploda celera (*Apium graveolens*) za primenu u prehrambenoj industriji“, 2012. Korisnik: Aleva, Srbija.

Novo tehničko rešenje (nije komercijalizovano) (M_{85} = 2)
prema važećem Pravilniku Ministarstva što je korišćeno pri bodovanju rezultata kandidatkinje

35. I. Žižović, D. Mišić, I. Arsić, V. Tadić, S. Petrović, M. Stamenić, J. Ivanović, **S. Milovanović**, J. Ašanin, D. Kostrzewa, A. Dobrzyńska–Inger, E. Roj. „Tehnološki postupak dobijanja izomerizovanog ekstrakta hmelja (*Humulus lupulus* L.) za primenu u farmaceutskim formulacijama“, 2014. Prihvaćeno od strane Matičnog naučnog odbora za materijale i hemijske tehnologije 25.03.2015. Korisnik: Institut “Josif Pančić”, TMF-Beograd, Veterinarski fakultet Beograd

Registrovani patent na nacionalnom nivou (M_{92} = 12)

36. I. Žižović, I. Arsić, V. Tadić, D. Mišić, S. Petrović, S. Jovanović, S. Đorđević, J. Ivanović, M. Stamenić, S. **Milovanović**, A. Žugić, S. Savić, J. Ašanin, N. Milčić Matić, M. Tasić-Kostov, Bioaktivni polučvrsti i tečni fitopreparati, Registarski broj: P-2014/0263, Glasnik intelektualne svojine 7/2016 str. 22, registarski broj 55130 B1 (2016)

37. I. Zizovic, D. Misic, V. Tadic, I. Arsic, S. Petrovic, S. Jovanovic, J. Ivanovic, M. Stamenic, J. Asanin, S. Djordjevic, A. Zugic, **S. Milovanovic**, D. Runjaic Antic, Farmaceutska kompozicija na bazi lekovitog bilja za primenu u humanoj i veterinarskoj medicini; Rešenje o priznatom patentu: 990 broj 2015/9150-P-2011/0586; 24.09.2015. Patent P-2011/0586, od 28.12.2011. godine, Registarski broj: 54162 RS B1 (2015), Glasnik intelektualne svojine 2015/6 str. 25-26

Objavljen patent na međunarodnom nivou (M_{93} = 9)

38. I. Žižović, S. Petrović, M. Stamenić, J. Ivanović, **S. Milovanović**, D. Mišić, K. Aksentijević, S. Jovanović, I. Arsić, V. Tadić, S. Đorđević, A. Žugić, J. Ašanin, D. Runjaić-Antić, Pharmaceutical composition based on the medicinal herbs for use in human and veterinary medicine, International application number: PCT/RS2012/000017, Publication number: WO/2013/100774 A1, 26/12/2012, (http://www.google.co.ug/patents/WO2013100774A1?cl=en).

Nagrada na izložbi (M_{104} = 2)

39. Pronalazak zaštićen patentnom prijavom P-2011/0586 "Farmaceutska kompozicija na bazi lekovitog bilja za primenu u humanoj i veterinarskoj medicini" nagrađen je srebrnom medaljom sa likom Nikole Tesle za oblast novih tehnologija na 32. Međunarodnoj izložbi pronalazaka, novih tehnologija i industrijskog dizajna „Pronalazaštvo -Beograd 2012“.

Poglavlje u knjizi (nekategorizovano)

40. I. Zizovic, J. Ivanovic, **S. Milovanovic**, M. Stamenic, Impregnations using supercritical carbon dioxide, edited by Edward Rój, Supercritical CO_2 extraction and its applications, Polish Foundations of the Opportunities Industrialization Centers “OIC Poland”, Lublin, Poland 2014, pg. 23-34, ISBN 978-83-86499-96-0.

Učešće u projektima (pre izbora u zvanje naučni saradnik)

1. Nacionalni projekat „Funkcionalni fiziološki aktivni biljni materijali sa dodatnom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji” III45017 (januar 2011- januar 2017)
   Uloga u projektu: istraživač
2. Međunarodni projekat “Novel experimental techniques for measuring thermodynamic properties of polymers under high pressure, relevant for impregnation and foaming with supercritical fluids” koji je finansirala Nemačka služba za akademsku razmenu (DAAD) (2015-2017)
   Uloga u projektu: istraživač
3. Međunarodni projekat “Comprehensive processing of plant extracts for high value added products” (COMPLANT, E!9906) koji je finansiran kroz EUREKA program (2016-2018)
   Uloga u projektu: istraživač

2.2. SPISAK OBJAVLJENIH RADOVA POSLE IZBORA U ZVANJE NAUČNI SARADNIK

Poglavlje u knjizi M12 (M_{14} = 4)

1. **S. Milovanovic**, M. Radetic, D. Misic, J. Asanin, V. Leontijevic, J. Ivanovic, I. Zizovic, “High pressure modified cotton in wound dressing applications” in “Cotton Fibers: Characteristics, Uses and Performance”, Ed. S. Gordon, 2017, Nova Science Publishers, New York, ISBN: 978-1-53610-930-6. Broj heterocitata = 1

Rad u međunarodnom časopisu izuzetnih vrednosti (M_{21a} = 10)

2. D. Marković**, S. Milovanović,** K. De Clerck, I. Zizovic, D. Stojanović, M. Radetić, Development of material with strong antimicrobial activity by high pressure CO_2 impregnation of polyamide nanofibers with thymol, Journal of CO_2 Utilization 26 (2018) 19-27 (ISSN: 2212-9820; DOI: 10.1016/j.jcou.2018.04.019; IF_{2018}=5.189; 11/137 Engineering, Chemical). Broj heterocitata = 3

Rad u vrhunskom međunarodnom časopisu (M_{21} = 8)

3. **S. Milovanovic**, J. Djuris, A. Dapčević, Dj. Medarevic, S. Ibric, I. Zizovic, Soluplus®, Eudragit®, HPMC-AS foams and solid dispersions for enhancement of Carvedilol dissolution rate prepared by a supercritical CO_2 process, Polymer testing 76 (2019) 54-64 (ISSN: 0142-9418; DOI: 10.1016/j.polymertesting.2019.03.001; IF_{2019}=3.275; 6/33 Materials Science, Characterization & Testing). Broj heterocitata = 1

4. **S. Milovanovic**, D. Markovic, A. Mrakovic, R. Kuska, I. Zizovic, S. Frerich, J. Ivanovic, Supercritical CO_2 - assisted production of PLA and PLGA foams for controlled thymol release,

Materials Science and Engineering: C 99 (2019) 394-404 (ISSN: 0928-4931; DOI: 10.1016/j.msec.2019.01.106; IF_{2019}=5.880; 7/38 Materials Science, Biomaterials). Broj heterocitata = 9

5. J. Djuris, **S. Milovanovic**, Dj. Medarevic, V. Dobricic, A. Dapcevic, S. Ibric, Selection of the suitable polymer for supercritical fluid assisted preparation of carvedilol solid dispersions, International Journal of Pharmaceutics 554 (2019) 190-200 (ISSN: 0378-5173; DOI: 10.1016/j.ijpharm.2018.11.015; IF_{2019}=4.845; 31/270 Pharmacology & Pharmacy). Broj heterocitata = 9
6. R. Kuska, **S. Milovanovic**, S. Frerich, J. Ivanovic, Thermal analysis of polylactic acid under high CO_2 pressure applied in supercritical impregnation and foaming process design, Journal of Supercritical Fluids 144 (2019) 71-80 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2018.10.008; IF_{2019}=3.744; 39/143 Engineering, Chemical). Broj heterocitata = 4
7. D. Marković, **S. Milovanović**, Ž. Radovanović, I. Zizovic, Z. Šaponjić, M. Radetić, Floating photocatalyst based on poly(ε-caprolactone) foam and TiO_2 nanoparticles for removal of textile dyes, Fibers and Polymers 19 (2018) 1219-1227 (ISSN: 1229-9197; DOI: 10.1007/s12221-018-8148-5; IF_{2018}=1.439; 5/24 Materials Science, Textiles). Broj heterocitata = 2
8. I. T. Žižović, L. Senerovic, I. Moric, T. Adamovic, M. Jovanovic, M. Kalagasidis Krusic, D. Misic, D. Stojanović, **S. Milovanovic**, Utilization of supercritical carbon dioxide in fabrication of cellulose acetate films with anti-biofilm effects against *Pseudomonas aeruginosa* and *Staphylococcus aureus*, Journal of Supercritical Fluids 140 (2018) 11-20 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2018.05.025; IF_{2018}=3.481; 29/137 Engineering, Chemical). Broj heterocitata = 5
9. **S. Milovanovic**, G. Hollermann, C. Errenst, J. Pajnik, S. Frerich, S. Kroll, K. Rezwan, J. Ivanovic, Supercritical CO_2 impregnation of PLA/PCL films with natural substances for bacterial growth control in food packaging, Food Research International 107 (2018) 486-495 (ISSN: 0963-9969; DOI: 10.1016/j.foodres.2018.02.065; IF_{2018}=3.579; 26/134 Food Science & Technology). Broj heterocitata = 16
10. S. Đurđević, **S. Milovanović**, K. Šavikin, M. Ristić, N. Menković, D. Pljevljakušić, S. Petrović, A. Bogdanović, Improvement of supercritical CO_2 and *n*-hexane extraction of wild growing pomegranate seed oil by microwave pretreatment, Industrial Crops and Products 104 (2017) 21–27 (ISSN: 0926-6690; DOI: 10.1016/j.indcrop.2017.04.024; IF_{2017}=3.849; 2/14 Agricultural Engineering). Broj heterocitata = 12

Rad u istaknutom međunarodnom časopisu (M_{22} = 5)

11. **S. Milovanovic**, T. Adamovic, K. Aksentijevic, D. Misic, J. Ivanovic, I. Zizovic, Cellulose acetate based material with antibacterial properties created by supercritical solvent impregnation, International Journal of Polymer Science, Volume 2017, Article ID 8762649, 9 pages (ISSN: 1687-9422; DOI: 10.1155/2017/8762649; IF_{2017}=1.718; 43/87 Polymer Science). Broj heterocitata = 6

Rad u međunarodnom časopisu (M_{23} = 3)

12. **S. Milovanovic**, D. Markovic, J. Ivanovic, Added-value porous materials for controlled thymol release obtained by supercritical CO_2 impregnation process, Cellular polymers 38 (2019) 153-166 (ISSN: 0262-4893; DOI: 10.1177/0262489319872329; IF_{2019}=1.680; 32/38 Materials Science, Biomaterials). Broj heterocitata = 1

13. D. Marković, **S. Milovanović**, M. Radoičić, Ž. Radovanović, I. Zizovic, Z. Šaponjić, M. Radetić, Removal of textile dyes from water by TiO_2 nanoparticles immobilized on poly(ε-caprolactone) beads and foams, Journal of Serbian Chemical Society 83 (2018) 1-13 (ISSN: 0352-5139; DOI: 10.2298/JSC180913089M; IF_{2018}=0.828; 140/172 Chemistry, Multidisciplinary). Broj heterocitata = 1
14. S. Maksimović, V. Tadić, J. Ivanović, T. Radmanović, **S. Milovanović**, M. Stanković, I. Žižović, Utilization of the integrated process of supercritical extraction and impregnation for incorporation of *Helichrysum italicum* extract into corn starch xerogel, Chemical Industry and Chemical Engineering Quarterly 24 (2018) 31 (ISSN: 1451-9372; IF_{2017}=0.944; 101/137 Engineering, Chemical). Broj heterocitata = 4

Saopštenje sa međunarodnog skupa štampano u celini (M_{33} = 1)

15. I. Zizovic, **S. Milovanovic**, J. Ivanovic, T. Adamovic, M. Jovanovic, D. Misic, L. Senerovic, Advanced cellulose acetate based materials with antibacterial properties obtained by supercritical impregnation with carbon dioxide, 10th World Congress of Chemical Engineering, 1st-5th October 2017, Barcelona, Spain, Oral presentation OC-32736, Book of Abstracts Pg. 901, ISBN 978-84-697-8629-1.

Saopštenje sa međunarodnog skupa štampano u izvodu (M_{34} = 0,5)

16. **S. Milovanovic**, D. Markovic, J. Ivanovic, Application of PLA aerogels impregnated with TiO_2 nanoparticles for treatment of colored wastewater, International conference on aerogels for biomedical and environmental application“,18.-20. February 2020 Santiago de Compostela, Spain, Oral presentation O-25
17. I. Lukic, J. Vulic, **S. Milovanovic**, J. Ivanovic, "Supercritical CO_2 impregnation of PLA/PCL film with carvacrol for food active packaging", First Iberian Meeting on Supercritical Fluids (1er Encuentro Ibérico de Fluidos Supercríticos/1º Encontro Ibérico de Fluidos Supercríticos), Santiago de Compostela (Spain), February 18 - 19, 2020, Book of Abstracts (usb flas), pp. 161-162.
18. I. Lukic, **S. Milovanovic**, M. Pantic, V. Tadic, "*Silybum marianum* extracts obtained by conventional and supercritical fluid extraction techniques", First Iberian Meeting on Supercritical Fluids (1er Encuentro Ibérico de Fluidos Supercríticos/1º Encontro Ibérico de Fluidos Supercríticos), Santiago de Compostela (Spain), February 18 - 19, 2020, Book of Abstracts (usb flas), pp. 105-106.
19. **S. Milovanović**, J. Ivanović, J. Djuris, M. Lučić Škorić, S. Maksimović, S. Ibrić, M. Kalagasidis Krusić, Modern Technologies for Fabrication of Porous Materials Using Supercritical CO_2, 13th Symposium “Novel Technologies and Economic Development”, Leskovac October 18-19, 2019, Book of abstracts, pp. 137 (ISBN 978-86-89429-35-0)
20. J. Đuriš, **S. Milovanović**, Đ. Medarević, V. Dobričić, S. Ibrić, Supercritical CO_2 utilization in preparation of poorly soluble drugs solid dispersions, 21st Yucomat, September 2-6, 2019, Herceg Novi, Montenegro, Oral presentation Y.O.S.IV.2, Programme & The Book of Abstract pp. 71 (ISBN 978-86-919111-4-0)
21. J. Ivanovic, **S. Milovanovic**, I. Lukic, R. Kuska, S. Frerich, Thymol release kinetics of PLA-based foams and films obtained by using supercritical CO2, 17th European Meeting on Supercritical Fluids, 8th-11th April 2019, Ciudad Real (Spain), Oral presentation

22. M. Lučić Škorić, **S. Milovanović**, G. Santagata, M. Malinconico, I. Žižović, M. Kalagasidis Krušić, Supercritical carbon dioxide for smart food packaging, 3rd Intetnational Conference on biopolymers and polymer chemistry, October 22-23, 2018 Prague, Czech Republic pp. 58

23. **S. Milovanovic**, J. Ivanovic, D. Markovic, I. Zizovic, Biomaterials for controlled thymol release produced using supercritical CO2, 25th Congress of the society of chemists and technologists of Macedonia, 19-22 September 2018 Ohrid, R. Macedonia, Book of abstracts, POL O-1, pp 217 (ISBN 978-9989-760-16-7)

24. J. Pajnik, I. Lukic, **S. Milovanovic**, I. Zizovic, High pressure functionalization of bio-composite films with thymol, 25th Congress of the society of chemists and technologists of Macedonia, 19-22 September 2018 Ohrid, R. Macedonia, Book of abstract, POL P-4, pp 224 (ISBN 978-9989-760-16-7)

25. T. Adamović, **S. Milovanović**, I. Žižović, Impregnation of cellulose acetate films with carvacrol using supercritical carbon dioxide, page 13, 16th Young Researches Conference, Material Science and Engineering, 6-8 December 2017, Belgrade, Serbia, Program and the Book of Abstracts, ISBN 978-86-80321-33-2

26. D. Marković, **S. Milovanović**, M. Radoičić, Ž. Radovanović, I. Žižović, Z. Šaponjić, M. Radetić, Polycaprolactone beads and foams substrates modified with colloidal TiO2 nanoparticles for application in photocatalysis, 16th Young Researches Conference, Material Science and Engineering, 6-8 December 2017, Belgrade, Serbia, Program and the Book of Abstracts, ISBN 978-86-80321-33-2

27. S. Đurđević, **S. Milovanović**, K. Šavikin, N. Menković, S. Petrović, Different processes for production of fatty oil isolated from wild growing pomegranate seed (*Punica Granatum* L.), 12th Symposium "Novel Technologies and Economic Development", 20th and 21st October 2017, Leskovac, Serbia, Poster CHE2

28. V. Tadic, **S. Milovanovic**, E. Roj, D. Misic, I. Arsic, I. Zizovic, Feverfew (*Tanacetum parrthenium* (L.) Sch. Bip., Asteraceae) – how to get high quality stable extracts for pharmaceutical application, 10th World Congress of Chemical Engineering, 1st-5th October 2017, Barcelona, Spain, Poster presentation Panel number T2.3.117

29. I. Zizovic, S. Maksimovic, J. Ivanovic, **S. Milovanovic**, V. Tadic, I. Arsic, Separation of phytochemicals from *Helichrysum italicum* and their impregnation using the combined supercritical fluid extraction and impregnation process, 10th World Congress of Chemical Engineering, 1st-5th October 2017, Barcelona, Spain, Poster presentation Panel number T2.3.119

30. **S. Milovanovic**, D. Markovic, K. Aksentijevic, J. Ivanovic, D.B. Stojanovic, V. Radojevic, I. Zizovic, Controlled release of thymol from cellulose acetate, 11th CESPT, September 22-24, 2016, Belgrade, Serbia, Book of Abstracts (OP13) 52-53 (ISSN: 2217-8767)

31. S. Roganovic, J. Zivkovic, M. Stankovic, D. Stojiljkovic, **S. Milovanovic**, V. Tadic, I. Arsic, Antioxidant capacity of hops (*Humuluis lupulus* L.) supercritical extracts, 50th Days of preventive medicine, Public Health Institute Niš, Faculty of Medicine, University of Niš, Serbian Medical Society of Niš, September 27-30 (2016), Book of Abstracts pp. 94 (ISSN: 978-86-915991-5-7)

Rad u vrhunskom časopisu nacionalnog značaja (M_{51} = 2)

32. T. Adamovic, **S. Milovanovic**, D. Markovic, I. Zizovic, Impregnation of cellulose acetate films with carvacrol using supercritical carbon dioxide, Tehnika 1 (2018) 19-25 (ISSN: 0040-2176 *Materials and Chemical technology 2018*)

Novo tehničko rešenje (nije komercijalizovano) (M_{85} = 2)

prema važećem Pravilniku Ministarstva što je korišćeno pri bodovanju rezultata kandidatkinje

33. **S. Milovanović**, Darka Marković, Stoja Milovanović, Tehnološki postupak za dobijanje aerogelova poli(mlečne kiseline) sa nanočesticama titan(IV)-oksida, Tehnološko-metaluršku fakultet, Univerziteta u Beogradu. Prihvaćeno od strane MNO za materijale i hemijske tehnologije na sednici održanoj 30.07.2020. godine

34. **S. Milovanović**, I. Lukić, J. Pajnik, J. Ivanović, Tehnološki postupak za dobijanje filmova poli (mlečne kiseline) / poli (Ɛ-kaprolaktona) impregniranih timolom, Tehnološko-metaluršku fakultet, Univerziteta u Beogradu. Prihvaćeno od strane MNO za materijale i hemijske tehnologije na sednici održanoj 24.02.2020. godine.

Registrovani patent na nacionalnom nivou (M_{92} = 12)

35. J. Ivanović, V. Tadić, **S. Milovanović**, J. Pajnik, I. Žižović, Postupak za dobijanje proizvoda sa stabilnim sadržajem partenolida, Registarski broj: 59455, Broj prijave: P-2017/0960 (26.09.2017), Datum objavljivanja prijave: 29.03.2019 ("Glasnik intelektualne svojine" broj 3/2019, 13 str), Broj i datum rešenja o priznanju prava: 2019/18796 12.11.2019.

36. D. Marković, **S. Milovanović**, M. Radoičić, Z. Šaponjić, I. Žižović, M. Radetić, Plutajući fotokatalizator na bazi pene polikaprolaktona i nanočestica titan(IV)-oksida, Broj prijave: P-2018/0703, Registarski broj: 58867, Datum objavljivanja prijave: 29.03.2019 ("Glasnik intelektualne svojine" broj 3/2019, 14 str), Broj i datum rešenja o priznanju prava: 2019/11779 12.07.2019.

Poglavlje u knjizi (nekategorizovano)

37. I. Zizovic, J. Ivanovic, **S. Milovanovic**, T. Adamovic,"Application of supercritical fluids in development of materials with antibacterial properties" in "Supercritical Fluid Applications" (2016) Ed. E. Roj, New Chemical Syntheses Institute, Pulawy, Poland, pg. 45-60. ISBN 978-83-935354-1-5 (29509 karaktera = 16,4 strana po 1800 karaktera)

Učešće u projektima (posle izbora u zvanje naučni saradnik)

1. Nacionalni projekat „Funkcionalni fiziološki aktivni biljni materijali sa dodatnom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji" III45017 (januar 2017-decembar 2019)
   Uloga u projektu: rukovodilac projektnog zadatka
2. Međunarodni projekat "Phytopreparations - natural materials with supercritical extracts for controlled release of active components" (SCIMPLANT E!12689) koji je finansiran kroz EUREKA program (2019-2021)
   Uloga u projektu: rukovodilac aktivnosti
3. Međunarodni projekat "Advanced Engineering and Research of aeroGels for Environment and Life Sciences" broj CA18125 koji finansira Evropska kooperacija u Nauci i Tehnologiji (COST) u periodu 2019-2023. godine
   Uloga u projektu: zamenik člana upravnog odbora
4. Međunarodni projekat "Green Chemical Engineering Network towards upscaling sustainable processes" broj CA18224 koji finansira Evropska kooperacija u Nauci i Tehnologiji (COST) u periodu 2019-2023. godine
   Uloga u projektu: član upravnog odbora

2.3. PET NAJZNAČAJNIJIH NAUČNIH OSTVARENJA KANDIDATKINJE OD PRETHODNOG IZBORA U ZVANJE

1. **S. Milovanovic**, J. Djuris, A. Dapčević, Dj. Medarevic, S. Ibric, I. Zizovic, Soluplus®, Eudragit®, HPMC-AS foams and solid dispersions for enhancement of Carvedilol dissolution rate prepared by a supercritical CO_2 process, Polymer testing 76 (2019) 54-64 (ISSN: 0142-9418; DOI: 10.1016/j.polymertesting.2019.03.001; IF_{2019}=3.275; 6/33 Materials Science, Characterization & Testing). Broj heterocitata = 1
2. R. Kuska, **S. Milovanovic**, S. Frerich, J. Ivanovic, Thermal analysis of polylactic acid under high CO_2 pressure applied in supercritical impregnation and foaming process design, Journal of Supercritical Fluids 144 (2019) 71-80 (ISSN: 0896-8446; DOI: 10.1016/j.supflu.2018.10.008; IF_{2019}=3.744; 39/143 Engineering, Chemical). Broj heterocitata = 4
3. D. Marković, **S. Milovanović**, K. De Clerck, I. Zizovic, D. Stojanović, M. Radetić, Development of material with strong antimicrobial activity by high pressure CO2 impregnation of polyamide nanofibers with thymol, Journal of CO_2 Utilization 26 (2018) 19-27 (ISSN: 2212-9820; IF_{2018}=5.189; 11/137 Engineering, Chemical). Broj heterocitata = 3
4. **S. Milovanovic**, D. Markovic, A. Mrakovic, R. Kuska, I. Zizovic, S. Frerich, J. Ivanovic, Supercritical CO_2 - assisted production of PLA and PLGA foams for controlled thymol release, Materials Science and Engineering: C 99 (2019) 394-404 (ISSN: 0928-4931; IF_{2019}=5.880; 7/38 Materials Science, Biomaterials). Broj heterocitata = 9
5. D. Marković, **S. Milovanović**, M. Radoičić, Z. Šaponjić, I. Žižović, M. Radetić, Plutajući fotokatalizator na bazi pene polikaprolaktona i nanočestica titan(IV)-oksida, Broj prijave: P-2018/0703, Registarski broj: 58867, Datum objavljivanja prijave: 29.03.2019 ("Glasnik intelektualne svojine" broj 3/2019, 14 str), Broj i datum rešenja o priznanju prava: 2019/11779 12.07.2019

Tri od navedenih pet naučnih ostvarenja su rezultat rada na nacionalnom projektu III45017 „Funkcionalni fiziološki aktivni biljni materijali sa dodatnom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji" koji je bio finansiran od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije.

2.4. ANALIZA RADOVA KOJI KANDIDATKINJU KVALIFIKUJU ZA IZBOR U ZVANJE VIŠI NAUČNI SARADNIK

Naučno-istraživački rad dr Stoje Milovanović se odnosi na razvoj i unapređenje novih tehnologija ekstrakcije i impregnacije biološki aktivnih komponenti u/na biodegradabilne polimerne materijale pomoću natkritičnog CO_2 u cilju dobijanja materijala sa dodatom vrednošću koji mogu naći primenu u medicini, farmaciji, kao i u prehrambenoj i tekstilnoj industriji. Natkritični CO_2 je inertan, jeftin i lako dostupan zeleni rastvarač koji se jednostavno i potpuno uklanja iz finalnog proizvoda. Zahvaljujući velikoj gustini i malom viskozitetu, natkritični CO_2 lako difunduje u čvrste materijale. Posebna pažnja naučno-istraživačkog rada je posvećena ispitivanju kinetike i optimizaciji procesa natkritične ekstrakcije (NKE) bioaktivnih komponenata iz biljnog materijala i optimizaciji procesa, modifikaciji polimera, kao i natkritičnoj impregnaciji (NKI) polimernih materijala bioaktivnim komponenatama. NKE je postupak separacije ekstrakta iz čvrstog materijala fluidom koji se nalazi u natkritičnom stanju, odnosno na

temperaturi iznad svoje kritične temperature i pritisku iznad svog kritičnog pritiska. Osnovna prednost NKE u odnosu na standardne metode separacije je u tome što se ona izvodi na umerenim temperaturama, te se može primeniti za izdvajanje termički nestabilnih jedinjenja. Pored toga, primena natkritičnih fluida omogućava brzu, jednostavnu i potpunu separaciju ekstrakta od biljnog materijala, kao i selektivnu ekstrakciju pojedinih komponenata ekstrakta jednostavnom promenom gustine natkritičnog fluida (promenom pritiska ili temperature). NKI podrazumeva rastvaranje bioaktivne supstance u natkritičnom fluidu i kontakt rezultujućeg rastvora sa polimernim materijalom koji će se impregnirati. Procesom NKI se prevazilaze brojni problemi koji se javljaju pri konvencionalnim metodama impregnacije kao što su upotreba organskih rastvarača, sušenje, degradacija ili gubitak bioaktivne komponente uklanjanjem rastvarača, nehomogenost itd. Integracijom procesa NKE i NKI dobija se proces koji kombinuje ekstrakciju aktivnih komponenata iz biljnih materijala i impregnaciju polimernih materijala pomoću natkritičnog CO_2 u jednom koraku. U poređenju sa odvojenim procesima NKE i NKI, integrisan proces štedi energiju, sirovinu i vreme jer se njime izbegava međukorak dekompresije. Pored navedenih procesa, naučno-istraživački rad dr Stoje Milovanović uključuje upotrebu natkritičnog CO_2 kao molekularnog lubrikanta za dobijanje polimernih pena i čvrstih disperzija bez upotrebe organskih rastvarača, kao i za sušenje alkogelova i acetogelova u cilju dobijanja aerogelova.

Proces NKE bioaktivnog ekstrakta iz semena divljeg nara je opisan u radovima 2.2/10 i 2.2/27. Intenzifikacija procesa NKE bioaktivnog ulja je postignuta primenom predtretmana mikrotalasima (100-600 W tokom 2 ili 6 min). Dokazano je da, pored povećanja prinosa ulja, mikrotalasni predtretman ne utiče značajno na sastav ulja. Hemijskom analizom je pokazano da je punicinska kiselina dominantna masna kiselina u ekstrahovanom ulju sa udelom oko 60%. Zahvaljujući izraženoj biološkoj aktivnosti punicinske kiseline, ulje semena nara se može upotrebiti u tretmanu kardiovaskularnih bolesti i dijabetesa. Rad 2.2/18 predstavlja proces NKE za dobijanje bioaktivnog ulja iz semena gujine trave. Proces NKE je upoređen sa klasičnom metodom ekstrakcije u aparaturi po Soxhletu upotrebom *n*-heksana i etanola. Iako je proces NKE omogućio izdvajanje najveće količine ekstrakta, hemijskom analizom je utvrđeno da etanolni ekstrakt sadrži najveću količinu bioaktivne komponente silimarin koja ima izražena hipolipemička svojstva. Nakon optimizacije procesa NKE iz šišarica hmelja, u radu 2.2/16 je dokazano da dobijeni ekstrakt ima značajnu antioksidativnu aktivnost.

Proces NKI bioaktivnih komponenata prirodnog porekla u/na biodegradabilne i/ili biokompatibilne polimere je optimizovan za pojedinačane trokomponentne sisteme (polimer-bioaktivna komponenta-natkritični CO_2). U radu 2.2/1 je kao model komponenta ispitan karvakrol koji je impregniran u/na pamučnu gazu. Proces impregnacije je optimizovan na pritisku 10, 21 i 30 MPa i temperaturi od 50 °C u periodu od 1 do 25 h. Pokazano je da karvakrol nije uticao na morfologiju i hemijski sastav polimera. Dokazana je antibakterijska aktivnost impregnirane gaze prema *E. coli* i *S. aureus*. Predstavljeni rezultati daju smernice za razvoj sistema za tretman inficiranih rana. U radu 2.2/2 je predstavljen razvoj materijala sa jakim antimikrobnim dejstvom primenom tečnog i natkritičnog CO_2 za impregnaciju timola u poliamidna nanovlakna. Utvrđen je uticaj procesnog pritiska i temperature na prinos impregnacije. Proces NKI je omogućio visoke prinose impregnacije (oko 60%) dok je konvencionalnim postupkom potapanja polimera u rastvor timola ostvaren prinos impregnacije oko 2%. Dokazano je da prinos impregnacije timola utiče na morfologiju poliamidnih nanovlakana. Dobijeni materijal je pokazao izraženo antimikrobno dejstvo prema *E. coli*, *S. aureus* i *C. albicans*. Amorfni polimeri PLA i PLGA koji imaju medicinsku primenu su ispitani kao nosači bioaktivne komponente timola u radovima 2.2/4 i 2.2/23. Predloženim procesom NKI su dobijene biokompatibilne i biodegradabilne pene koje kontrolisano otpuštaju bioaktivnu komponentu tokom dužeg vremenskog perioda. Dokazano je da se primenom

natkritičnog CO_2 veće gustine u procesu NKI dobijaju pene sa porama manjeg prečnika. Sve dobijene pene su kontrolisano otpuštale timol u PBS-u na 37 °C tokom dužeg vremenskog perioda (od 3 do 6 nedelja). Metodama karakterizacije (FTIR i DSC na atmosferskom i na povišenom pritisku) je pokazan uticaj procesnih uslova i prinosa impregnacije timola na polimere. Rad 2.2/6 prikazuje ispitivanje procesnih uslova, koji su optimizovani za procesiranje i dobijanje stabilnih pena polimera PLA inicijalno proizvedenih za procese oblikovanja ekstruzijom i injektiranjem, za NKI timola. Variranjem u pritiscima od 20 do 30 MPa, temperaturama od 100 do 120 °C, i vremenu od 2 h i 24 h omogućeno je dobijanje materijala sa prinosom impregnacije timola od 4,7 do 19,8%. Rezultati su dali smernice za dobijanje antimikrobnog materijala koji se može koristiti u izradi aktivnog pakovanja hrane. Radovi 2.2/8 i 2.2/15 predstavljaju optimizaciju procesa dobijanja filmova acetata celuloze metodom izlivanja i procesa NKI dobijenih filmova timolom da bi se proizveli materijali koji imaju anti-biofilm aktivnost. Ispitivanjem filmova, pokazano je da film sa prinosom impregnacije timola 30% ima optimalna svojstva (nepromenjenu morfologiju poroznog filma i da kontrolisano otpušta timol 6 h u fiziološkom rastvoru na 35 °C). Dokazano je da filmovi acetata celuloze impregnirani timolom sprečavaju stvaranje biofilmova bakterija *Pseudomonas aeruginosa* i MRSA (methicilin resistant *Staphylococcus aureus*). Rezultati su upoređeni sa antibakterijskom aktivnošću kuglica acetata celuloze impregniranih timolom. Proces optimizacije dobijanja filmova metodom izlivanja, koji se sastoje od polimera PLA i PCL i optimizacije NKI timola u/na dobijene filmove je prikazan u radu 2.2/9. Sadržaj PCL u filmovima kao i operativno vreme su varirani u cilju dobijanja maksimalnog prinosa impregnacije koji ne narušava strukturu filmova. TGA i DTA analiza je pokazala su dobijeni filmovi stabilni do 150 °C. Dokazano je da film sa prinosom impregnacije oko 36% pokazuje jaku antibakterijsku aktivnost prema *Bacilus subtilis* i *E. coli*. Rezultati su ukazali na potencijal dobijenih filmova za upotrebu kao materijala za aktivno pakovanje. U nastavku istraživanja, u radu 2.2/21 je pokazano da dobijeni filmovi kontrolisano otpuštaju timol. Dodatno, uslovi procesa NKI timola su upotrebljeni kao smernica za proces NKI karvakrola u/na PLA/PCL filmove koji se mogu upotrebiti kao aktivno pakovanje hrane (rad 2.2/17). Proces NKI karvakrola nije značajno uticao na promenu zatezne čvrstoće filmova. Dokazano je da PLA/PCL filmovi kontrolisano otpuštaju karvakrol. Natkritični CO_2 je upotrebljen za dobijanje materijala koji ima značajno antimikrobno dejstvo, a koji se sastoji iz acetata celuloze (u obliku kuglica prečnika oko 1-2 mm) i karvakrola. Rezultati istraživanja su predstavljeni u radu 2.2/11. NKI proces je optimizovan na pritiscima 10, 21 i 30 MPa i temperaturi 50 °C tokom 2 do 18 h. Pokazano je da se brzina impregnacije karvakrola povećava sa povećanjem pritiska, dok maksimalni prinos impregnacije (oko 60%) nije zavisio od primenjenih uslova. Kuglice acetata celuloze impregnirane karvakrolom imaju pore veličine do 2 μm. Dokazano je da dobijeni materijal pokazuje izuzetno antibakterijsko dejstvo prema 16 vrsta testiranih bakterija uključujući i MRSA sojeve. Rezultati ove studije su dali smernice za optimizaciju procesa impregnacije filmova acetata celuloze karvakrolom (radovi 2.2/25 i 2.2/32). Filmovi acetata celuloze su dobijeni metodom izlivanja sa i bez upotrebe plastifikatora glicerola. Proces NKI je optimizovan na pritisku 21 MPa i temperaturi 50 °C variranjem operativnog vremena od 30 min do 120 min i brzine dekompresije 0,3 i 36 MPa/min. Pokazano je da prisustvo plastifikatora karvakrola u filmovima ometa proces NKI, smanjujući prinos impregnacije do 6 puta. Dobijeni filmovi su ispitani AFM i DSC metodom. Pokazano je da se karvakrol otpušta kontrolisano u fiziološkom rastvoru do 24 h. Higuchi and Korsmeyer-Peppas modeli su uspešno primenjeni za opis kinetike otpuštanja karvakrola iz filmova. Zahvaljujući svojim svojstvima dobijeni filmovi se mogu upotrebiti u medicini za previjanje inficiranih rana. Poređenje svojstava polimera kao potencijalnih nosača timola koji kontrolisano otpuštaju bioaktivnu supstancu je predstavljeno u radu 2.2/12. Upoređeni su polimeri PCL (u obliku kuglica), acetata celuloze (u obliku

filma) i PLGA (u obliku ljuspica). Dobijeni materijali su pokazali različitu kinetiku otpuštanja bioaktivne komponente. Pokazano je da na testiranim pritiscima i temperaturama, produženje operativnog vremena povećava prinos impregnacije. Proces NKI je omogućio dobijanje PCL pena sa srednjim prečnikom pora 175 μm i PLGA pena sa srednjim prečnikom pora 87 μm. Proces NKI nije uticao na morfologiju filmova acetata celuloze koji su imali srednji prečnik pora oko 3 μm. Kinetika otpuštanja timola koja je ispitana u fosfatnom puferu na 37 °C je uspešno opisana Korsmeyer-Peppas, i Higuchi modelima, kao i modelima nultog i prvog reda. Pokazano je da otpuštanje timola značajno zavisi od izbora polimernog nosača i da može biti od 5 h do nekoliko dana. U radu 2.2/22 je pokazano da se proces NKI timola u/na termoplastični skrob može uspešno primeniti za dobijanje materijala koji kontrolisano otpušta antimikrobnu supstancu u vodi na uslovima skladištenja na hladnom i na sobnoj temperaturi. Dobijeni materijal ima potencijalnu primenu za razvoj materijala za aktivno pakovanje. U radu 2.2/24 je prikazan postupak razvoja procesa dobijanja filmova hitozana sa i bez dodatka zeolita koji se mogu impregnirati timolom i upotrebiti za razvoj aktivnog pakovanja. Rad 2.2/30 predstavlja ispitivanje kontrolisanog otpuštanja timola iz impregniranog acetata celuloze. Kuglice acetata celuloze su impregnirane na pritisku 10 MPa i temperaturi 35 °C tokom 2 do 28 h. Pored metode ispitivanja otpuštanja timola u vodi, fosfatnom puferu i hlorovodoničnoj kiselini, dobijeni materijal je ispitan SEM, FTIR i DSC metodom. Dokazano je da se morfologija acetata celuloze značajno menja sa povećanjem prinosa impregnacije timola. U zavisnosti od prinosa impregnacije i medijuma za otpuštanje, uzorci su kontinualno otpuštali timol u periodu od jednog do tri dana.

Integrisani proces NKE-NKI je predstavljen u radu 2.2/6. Procesni uslovi (pritisak, temperatura, vreme i brzina dekompresije) koji su označeni kao optimalni nakon ispitivanja svojstva PLA, tokom i nakon izloženosti dejstvu natkritičnog CO_2 i impregnacije timola, su primenjeni za integrisan proces NKE iz kultivisanog timijana i NKI izdvojenog ekstrakta u polimer. Na ovaj način je smanjen utrošak energije, gubitak ekstrakta i degradacija ekstrakta usled izloženosti atmosferskim uslovima. Rezultati su dali smernice za dobijanje antimikrobnog materijala koji se može koristiti u izradi aktivnog pakovanja hrane. Procesni uslovi (pritisak, temperatura, vreme i brzina dekompresije) koji su označeni kao optimalni nakon procesa NKI filmova PLA/PCL timolom, koji su prikazani u radu 2.2/9, su primenjeni za integrisan proces NKE-NKI ekstrakcije iz kultivisanog timijana i impregnacije izdvojenog ekstrakta u polimerni film. Dobijeni impregnirani filmovi se mogu upotrebiti za razvoj materijala za aktivno pakovanje koje kontroliše bakterijski rast. Radovi 2.2/14 i 2.2/29 su pokazali veliki potencijal integrisanog procesa NKE-NKI za impregnaciju čvrstih materijala komponentama smilja rastvorljivim u natkritičnom CO_2. Optimizovani operativni uslovi integrisanog procesa su uspešno primenjeni na impregnaciju kserogela kukuruznog skroba za potencijalnu primenu u farmaceuticima, hrani i kozmetici. U radovima 2.2/28 i 2.2/35 je prikazan potencijal integrisanog procesa NKE-NKI za stabilizovanje ekstrakta povratića. Stabilizacija partenolida, glavne komponente ekstrakta povratića, je postignut impregnacijom ekstrakta u/na kserogelove skroba u periodu dužem od dve godine. Ovim je pokazan potencijal procesa NKE-NKI kao obećavajuće tehnike za dobijanje proizvoda koji se mogu koristiti u farmaceutskoj industriji.

Uloga natkritičnog CO_2 kao rastvarača koji menja morfologiju polimera bez uticaja na hemijski sastav je ispitana u radu 2.2/3. Rad predstavlja optimizaciju procesa u cilju modifikacije polimera (Soluplus®, Eudragit® i HPMC-AS) koji se upotrebljavaju u farmaceutskoj industriji kao nosači lekova. Pokazano je da se natkritični CO_2 rastvara u testiranim polimerima i da se nakon dejstva natkritičnog CO_2 i njegovog uklanjanja iz sistema dobijaju stabilne pene srednjeg prečnika pora oko 200 μm koje se mogu upotrebiti za razvoj farmaceutskih formulacija koje će imati produženo vreme zadržavanja u želudcu usled plutanja. Takođe, dokazano je da se natkritični CO_2 može upotrebiti za prevođenje kardiovaskularnog leka

karvedilola iz kristaliničnog u amorfni oblik. Nakon što su smeše polimera i leka izložene dejstvu natkritičnog CO_2 dobijene su amorfne čvrste disperzije koje su značajno povećale rastvorljivost leka. Pokazano je da se natkritični CO_2 može koristiti za dobijanje farmaceutskih formulacija koje mogu povećati bioraspoloživost karvedilola. Radovi 2.2/5 i 2.2/20 predstavljaju izbor odgovarajućeg polimera za pripremu čvrstih disperzija leka karvedilol primenom natkritičnog CO_2. Upoređeni su farmaceutski polimeri (PVP, HPMC, Soluplus® i Eudragit®) kao nosači slaborastvorljivog leka. Dobijene čvrste disperzije su ispitane SEM, FTIR, XRD i DSC metodama. Ispitana je i rastvorljivost leka iz čvrstih disperzija i kao kompresibilnost čvrstih disperzija. Poređenjem rezultata, dokazano je da čvrsta disperzija karvedilola sa PVP ima najbolja svojstva i da izraženo povećava rastvorljivost leka omogućavajući potpuno rastvaranje leka za 10 min (rastvorljivost netretiranog karvedilola je oko 30%). Rad 2.2/6 prikazuje ispitivanje svojstava polimera PLA koji su proizvedeni za procese oblikovanja ekstruzijom i injektiranjem za primenu u industriji hrane kao materijali za pakovanje. Svojstva polimera su ispitana primenom DSC metode na atmosferskom i na povišenom pritisku do 50 MPa. Ispitana su svojstva polimera pre, tokom i nakon izloženosti dejstvu natkritičnog CO_2. Rezultati su dali značajne informacije o promeni svojstava polimera pod uticajem natkritičnog CO_2. Dokazano je da do najvećeg pada temperature topljenja i kristaliničnosti polimera dolazi na pritiscima 20-30 MPa. Pokazano je da procesni pritisak od 30 MPa i tempreratura od 100 °C omogućavaju dobijanje PLA pena koje imaju veličinu pora od 15-200 μm koje se mogu primeniti za razvoj materijala za izolaciju. Radovi 2.2/7, 2.2/13, 2.2/26, 2.2/34 i 2.2/36 se bave modifikacijom neporoznih kuglica PCL u cilju dobijanja hidrofobne pene velike poroznosti (oko 75%). Pokazano je da natkritični CO_2 nije uticao na sastav polimera i da nije zaostao u peni nakon procesa. Ispitane su mogućnosti korišćenja dobijene pene kao plutajućeg nosača za nanočestice TiO_2. Pokazano je da je dobijen stabilan kompozit koji se može koristiti kao plutajući fotokatalizator u tretmanu obojenih otpadnih voda. Za tu svrhu je ispitana fotokatalitička aktivnost komercijalnih nanočestica TiO_2 Degussa P-25 i sintetisanih nanočestica TiO_2 na vodene rastvore boja (*C.I. Acid Orange 7* i *C.I. Basic Yellow 28*) koje se upotrebljavaju u tekstilnoj industriji. Uklanjanje boje pod dejstvom plutajuće pene PCL sa imobilisanim nanočesticama TiO_2 je upoređeno sa dejstvom PCL kuglica sa imobilisanim nanočesticama TiO_2. Dokazano je da su plutajući kompoziti PCL pene i nanočestica TiO_2 superiorniji u odnosu na neplutajuće kompozite PCL kuglica i nanočestica TiO_2. Plutajući fotokazalizatori su obezbedili potpuno obezbojavanje od 180 min do 24 h u zavisnosti od testiranog uzorka i boje. Upotreba natkritičnog CO_2 za sušenje alkogelova PLA u cilju dobijanja aerogelova velike poroznosti (oko 75%) je opisana u radovima 2.2/16 i 2.2/33. Uslovi pritiska i temperature su varirani u cilju dobijanja aerogelova veće poroznosti. Dobijeni aerogelovi su testirani kao nosači nanočestica TiO_2 za degradaciju obojenih otpadnih voda tekstilne industrije. Dokazano je da dobijeni plutajući fotokatalizator ima izraženu sposobnost plutanja i fotodegradacije boje obezbojivši vodeni rastvor boje *C.I. Acid Orange 7* za 240 min. Rad 2.2/19 je prikazao moderne tehnologije za proizvodnju poroznih materijala upotrebom natkritičnog CO_2. Pokazano je da se natkritični CO_2 uspešno može koristiti za dobijanje polimernih pena (PCL, PLGA, PLA, Soluplus® i Eudragit®) i za sušenje alkogelova i acetogelova (PMMA, skroba i hitozan/alginata) u cilju dobijanja aerogelova.

2.5. CITIRANOST NAUČNIH RADOVA (bez autocitata) PREMA BAZI SCOPUS
(na dan 28.07.2020)

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KVALITATIVNA OCENA NAUČNIH REZULTATA

3. KVALITET NAUČNIH REZULTATA

3.1. Naučni nivo, značaj i primenjivost rezultata

Dr Stoja Milovanović se bavila proučavanjem procesa ekstrakcije iz biljnih materijala, impregnacije polimera, dobijanja poroznih polimernih materijala, sušenja gelova i dobijanja aerogelova, amorfizacije lekova pod uticajem zelenog medijuma natkritičnog CO_2. Proučavanja su obuhvatila razvoj i optimizaciju procesa dobijanja materijala sa dodatom vrednošću koju mogu naći primenu u farmaceutskoj, prehrambenoj i tekstilnoj industriji. Na osnovu sprovedenih istraživanja razvijeni su novi postupci za dobijanje novih i/ili unapređenih materijala i definisana su 4 tehnička rešenja (2 nakon izbora) i 5 patenta (2 nakon izbora). U dosadašnjem naučno-istraživačkom radu objavila je ukupno 2 poglavlja u knjigama međunarodnog značaja, 2 poglavlja u knjigama (bez kategorije), 31 naučni rad od kojih su 26 objavljeni u međunarodnim časopisima sa SCI liste (u međunarodnom časopisu izuzetnih vrednosti (M21a) 2 rada, u vrhunskom međunarodnom časopisu (M21) 16 radova, u istaknutom međunarodnom časopisu (M22) 4 rada i u međunarodnom časopisu (M23) 4 rada), 1 naučni rad objavljen u časopisu međunarodnog značaja verifikovanog posebnom odlukom (M24) i 3 rada objavljena u domaćim časopisima (od kojih u vrhunskom časopisu nacionalnog značaja (M51) 2 rada i u istaknutom časopisu nacionalnog značaja (M52) 1 rad, sa ukupnim zbirom impakt faktora **71,988** od čega je **40,451** posle izbora u prethodno zvanje. Do 28.07.2020. radovi su ukupno citirani **410**, odnosno **337** bez autocitata, što ukazuje na njihov naučni nivo i uticajnost u ovoj istraživačkoj oblasti i potvrđuje njihov visok kvalitet. Od radova koji su objavljeni nakon prethodnog izbora u zvanje, najveći broj heterocitata (**16**) ima rad kategorije M21 (2.2/9) u vrhunskom međunarodnom časopisu izuzetnih vrednosti sa impakt faktorom **3,579** kome je kandidatkinja kao autor dala doprinos u razvoju i optimizaciji postupka dobijanja materijala sa jakim antimikrobnim dejstvom primenom metode impregnacije upotrebom CO_2 pod visokim pritiskom, sa posebnim osvrtom na uticaj metode impregnacije na svojstva bidegradabilnog polimera. Dr Stoja Milovanović je dala poseban doprinos u razvoju ekološki prihvatljivih procesa ekstrakcije i impregnacije funkcionalnih fiziološki aktivnih biljnih materijala sa dodatom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji u okviru tima koji je realizovao projekat III45017 koje je finansiralo Ministarstvo prosvete, nauke i tehnološkog razvoja Republike Srbije, a čiji su rezultati objavljeni u 4 originalna naučna poglavlja u knjigama međunarodnog značaja (2 poglavlja kategorije M14 i 2 poglavlja nekategorizovana) i u 17 originalnih naučnih radova u časopisima visokog impakt faktora (**5,080** i **4,811**) (1 kategorije M21a, 11 kategorije M21, 3 kategorije M22 i 2 kategorije M23) od kojih su šest radova zasnovana na rezultatima doktorske disertacije kandidatkinje. Kao rezultat učešća na bilateralnom projektu proistekla su 3 rada kategorije M21 i 1 kategorije M51, dok je rezltat učešća na međunarodnom projektu patentna prijava kategorije M92.

Praktičan značaj postignutih rezultata ispitivanja koje je kandidat realizovala u okviru projekta koji je finansiran od strane Ministarstva prosvete, nauke i tehnološkog razvoja potvrđuju 4 tehnička rešenja od kojih su dva nakon izbora u prethodno zvanje (2.2/33 i 2.2/34), a koje je Matični naučni odbor za Materijale i hemijske tehnologije prihvatio u kategoriji M85. Tehničko rešenje (2.2/33) je bazirano na rezultatima ispitivanja dobijanja aerogelova poli(mlečne kiseline) upotrebom natkritičnog CO_2 impregniranih nanočesticama TiO_2 koji se mogu primeniti za tretman obojenih otpadnih voda, dok je tehničko rešenje (2.2/34) bazirano na rezultatima ispitivanja dobijanja biodegradabilnih filmova impregniranih timolom koji se mogu primeniti za dobijanje aktivnog pakovanja hrane koja su objavljena u radu kategorije M21 (impakt faktor **3,520**). Pored tehničkih rešenja, na osnovu originalnih rezultata, registrovano je pet patenata od kojih su dva nakon izbora u prethodno zvanje (2.2/35 i 2.2/36).

3.2. Uticajnost, citiranost i parametri kvaliteta časopisa

Dr Stoja Milovanović je autor/koautor 2 poglavlja u knjigama međunarodnog značaja, 2 poglavlja u knjigama (bez kategorije), 31 naučnog rada od kojih su 26 objavljeni u međunarodnim časopisima sa SCI liste (u međunarodnom časopisu izuzetnih vrednosti (M21a) 2 rada, u vrhunskom međunarodnom časopisu (M21) 16 radova, u istaknutom međunarodnom časopisu (M22) 4 rada i u međunarodnom časopisu (M23) 4 rada), 1 naučni rad objavljen u časopisu međunarodnog značaja verifikovanog posebnom odlukom (M24) i 3 rada objavljena u domaćim časopisima (od kojih u vrhunskom časopisu nacionalnog značaja (M51) 2 rada i u istaknutom časopisu nacionalnog značaja (M52) 1 rad). Dva rada su objavljena u međunarodnim časopisima sa impakt faktorom većim od 5, dva rada u časopisu sa impakt faktorom većim od 4, pet radova u časopisima sa impakt faktorom većim od 3, osam radova u časopisima sa impakt faktorom većim od 2, šest radova u časopisima sa impakt faktorom većim od 1, četiri rada u časopisima sa impakt faktorom manjim od 1. Ukupan zbir impakt faktora objavljenih radova je **71,988.**

Posle izbora u prethodno zvanje, kandidat je autor/koautor 2 poglavlja u knjigama međunarodnog značaja i 13 radova sa ukupnim zbirom impakt faktora **40,451.** Dva rada su objavljena u međunarodnim časopisima sa impakt faktorom većim od 5, jedan rad u časopisu sa impakt faktorom većim od 4, pet radova u časopisima sa impakt faktorom većim od 3, tri rada u časopisima sa impakt faktorom većim od 1 i dva rada u časopisima sa impakt faktorom manjim od 1.

Citiranost radova prema Scopus bazi podataka (na dan 28.07.2020) iznosi ukupno **410**, odnosno **337** bez autocitata (Tabela 3), dok je Hiršov indeks (*h*-indeks) **13** (sa autocitatima i bez autocitata).

3.3. Ocena samostalnosti kandidatkinje

U toku dosadašnjeg naučno-istraživačkog rada, dr Stoja Milovanović je pokazala veliku posvećenost i izuzetnu samostalnost u realizaciji dodeljenih zadataka, u postavljanju hipoteza, kreiranju i realizaciji eksperimenata, interpretaciji dobijenih rezultata, kao i u pisanju publikacija. Takođe, uspešno je pokazala sposobnost u ispitivanjima u novim naučnim oblastima, u razvoju naučne saradnje u zemlji i inostranstvu i u realizaciji multidisciplinarnih projekta. Doprinos dr Stoje Milovanović u koautorskim radovima ogleda se u eksperimentalnom izvođenju procesa pod visokim pritiscima upotrebom natkritičnog CO_2 i obradi/diskusiji dobijenih rezultata koji se odnose na optimizaciju procesa ekstrakcije biološki aktivnih jedinjenja, optimizaciju procesa dobijanja poroznih polimernih materijala i/ili impregnaciju polimera i tekstila bioaktivnim supstancama pomoću natkritičnih fluida, i ispitivanje svojstava polimernih materijala sa dodatom vrednošću dobijenih pod visokim pritiskom. Objavljena su 2 rada u knjigama međunarodnog

značaja, 2 rada u međunarodnom časopisu izuzetnih vrednosti, 16 radova u vrhunskom međunarodnom časopisu, 4 rada u istaknutom međunarodnom časopisu, 4 rada u međunarodnom časopisu, 1 rad u časopisu međunarodnog značaja verifikovanog posebnom odlukom, 2 rada u vrhunskom časopisu nacionalnog značaja, 1 rad u istaknutom časopisu nacionalnog značaja, 9 saopštenja sa međunarodnog skupa štampana u celini, 22 saopštenja sa međunarodnog skupa štampana u izvodu i 1 saopštenje sa skupa nacionalnog značaja štampano u celini, 3 tehnička rešenja i 5 patenta. Prosečan broj autora po radu iz kategorije M20 je 5,923, a kandidat je prvi autor u 9 radova, a drugi autor u 8 radova M20 kategorije.

Dr Stoja Milovanović je rukovodila projektnim zadatkom koji je obuhvatio procese natkritične ekstrakcije, natkritične impregnacije, modifikaciju polimera i dobijanje materijala sa dodatom vrednošću upotrebom natkritičnog CO_2 i karakterizaciju dobijenih materijala koji je realizovan u okviru projekta III 45017 „Funkcionalni fiziološki aktivni biljni materijali sa dodatom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji". Dodatno, Dr Stoja Milovanović rukovodi aktivnostima potprojekta „Procesi pod visokim pritiscima" u okviru Eureka projekta "Phytopreparations - natural materials with supercritical extracts for controlled release of active components" E!12689. Kao dokazi, priložene su potvrde rukovodioca projekta III45017 i E!12689 o rukovođenju (Prilog).

Potvrda samostalnosti dr Stoje Milovanović je i učestvovanje u radu komisije za ocenu i odbranu doktorske disertacije kandidata Sanja Đurđević pod nazivom „Optimizacija procesa ekstrakcije ulja divljeg nara (*Punica granatum* L.) primenom mikrotalasa i ispitivanje biološke aktivnosti dobijenog ulja" (2019). Kao dokaz, priložena je odluka o imenovanju Komisije za ocenu i odbranu doktorske disertacije.

Dr Stoja Milovanović je recenzirala radove iz kategorije M20 (*Journal of CO_2 Utilization, Carbohydrate Polymers, Journal of Supercritical Fluids, Scientific reports, Colloids and Surfaces A: Physicochemical and Engineering Aspects, Journal of Engineered Fibers and Fabrics*). Kao dokaz, priložene su potvrde o recenziranju.

Dr Stoja Milovanović je aktivno učestvovala u edukaciji stranih studenata (iz Nemačke, Grčke, Turske, Hrvatske, Tajlanda, Portugala) i realizaciji njihove stručne prakse koji su na TMFu došli preko IAESTE organizacije i Nemačke službe za akademsku razmenu (DAAD). Učestvovala je u izradi završnih radova, diplomskih radova koji su urađeni u okviru projekta III45017 i odbranjeni na Tehnološko-metalurškom fakultetu Univerziteta u Beogradu. Takođe, dr Stoja Milovanović aktivno je učestvovala u promociji fakulteta i tehnoloških nauka na Međunarodnom sajmu tehnike u Beogradu i promociji srednjoškolcima kroz tehnološku studiju slučaja "Tech Case Study".

3.4. Angažovanost u formiranju naučnih kadrova

Pored naučno-istraživačkog rada, dr Stoja Milovanović je dala značajan doprinos u formiranju naučnih kadrova učestvovanjem u izradi diplomskih, završnih, master i doktorskih radova. Kandidatkinja je rukovodila i učestvovala u izradi četiri master rada kandidata: Milica Pantić pod nazivom „Natkritična impregnacija polisaharidnih gelova tapioka skroba i hitozana timolom" (2013), Filip Petrović pod nazivom „Natkritična impregnacija acetata celuloze i polisaharidnih gelova kukuruznog skroba timolom" (2015), Tijana Adamović pod nazivom „Natkritična impregnacija filmova acetata celuloze karvakrolom" (2016) i Milena Jovanović pod nazivom „Primena natkritičnog ugljenik(IV)-oksida za dobijanje filmova sa antibakterijskim dejstvom na bazi acetata celuloze" (2017). Takođe, učestvovala je u eksperimentalnim ispitivanjima tokom izrade dve doktorske disertacije kandidata: Svetolik Maksimović pod nazivom „Ekstrakcija iz smilja (*Helichrysum italicum*) i impregnacija čvrstih nosača ekstraktom primenom natkritičnog ugljenik(IV)-oksida" (2017) i Aleksandra Bogdanović pod nazivom „Dobijanje,

karakterizacija i optimizacija hipolikemijskih ekstrakata matičnjaka (*Melissa officinalis*) i grčkog semena (*Trigonella foenum-graecum*) natkritičnim ugljenik(IV)-oksidom" (2016).

Pored navedenog, dr Stoja Milovanović je bila član 1 komisije za ocenu podobnosti teme i kandidata za izradu doktorske disertacije, kao i član 1 komisije za odbranu doktorske disertacije kandidata Sanje Đurđević pod nazivom „Optimizacija procesa ekstrakcije ulja divljeg nara (*Punica granatum L.*) primenom mikrotalasa i ispitivanje biološke aktivnosti dobijenog ulja" (2019). Dr Stoja Milovanović je rukovodila eksperimentalnim ispitivanjem i učestvovala u eksperimentalnom izvođenju mikrotalasnog predtretmana semena divljeg nara i ekstrakcije ulja iz biljnog materijala upotrebom *n*-heksana i natkritičnog CO_2, a rezultati su objavljeni u radu kategorije M21 (2.2/10). Kao dokaz, priloženi su zajednički radovi i odluke.

3.5. Normiranje broja poena prema broju koautora

Prema kriterijumima Pravilnika o postupku i načinu vrednovanja i kvantitativnom iskazivanju naučno-istraživačkih rezultata, normiranju podležu četiri rada kategorije M21, jedno tehničko rešenje kategorije M85, dva patenta kategorije M92 i jedan patent kategorije M93 što je uzeto u obzir pri kvantitativnom iskazivanju naučno-istraživačkih rezultata kandidatkinje.

3.6. Rukovođenje projektima, potprojektima i projektnim zadacima

U toku angažovanja na projektu III 45017 pod nazivom „Funkcionalni fiziološki aktivni biljni materijali sa dodatom vrednošću za primenu u farmaceutskoj i prehrambenoj industriji", dr Stoja Milovanović je rukovodila projektnim zadatkom koji je obuhvatio procese natkritične ekstrakcije, natkritične impregnacije, modifikaciju polimera i dobijanje materijala sa dodatom vrednošću upotrebom natkritičnog CO_2 i karakterizaciju dobijenih materijala. Dodatno, Dr Stoja Milovanović rukovodi aktivnostima potprojekta „Procesi pod visokim pritiscima" u okviru Eureka projekta "Phytopreparations - natural materials with supercritical extracts for controlled release of active components" E!12689. Potvrde o rukovođenju rukovodilaca projekata III45017 i E!12689 su priložene kao dokaz.

4. OSTALI POKAZATELJI USPEHA U NAUČNOM RADU

4.1. Nagrade i priznanja za naučni rad dodeljen od strane relevantnih naučnih institucija i društava

Dr Stoja Milovanović je koautor pronalaska koji je nagrađen srebrnom medaljom sa likom Nikole Tesle na 32. Međunarodnoj izložbi pronalazaka, novih tehnologija i industrijskog dizajna „Pronalazaštvo -Beograd 2012" 2012. godine. (2.1/39). Kao dokaz, priložena je kopija diplome.

4.2. Patenti

Dr Stoja Milovanović je koautor 4 patenta (2.1/36, 2.1/37, 2.2/35 i 2.2/36) koja su registrovana na nacionalnom nivou kategorije M92 i 1 patenta objavljenog na međunarodnom nivou kategorije M93 (2.1/38). Kao dokaz, dostavljene su kopije rešenja i objavljenih patenata u Glasniku intelektualne svojine.

4.3. Članstvo u naučnom društvu

Dr Stoja Milovanović je član Srpskog hemijskog društva i Američkog hemijskog društva (engl. American Chemical Society). Kao dokaz, priložen je sertifikat i kopije članskih karti.

4.4. Recenzije naučnih radova

Dr Stoja Milovanović je recenzirala radove iz kategorije M20:

- *Journal of CO_2 Utilization (M21a): Manuscript ID JCOU_2016_60 (2016), Manuscript ID JCOU_2018_744 (2018), Manuscript JCOU_2018_552 (2019);*
- *Carbohydrate Polymers (M21a): Manuscript ID CARBPOL-D-17-01370 (2017), Manuscript ID CARBPOL-D-17-04149 (2018);*
- *Journal of Supercritical Fluids (M21): Manuscript ID SUPFLU_2018_454 (2018), Manuscript ID SUPFLU-D-20-00171 (2020);*
- *Scientific reports (M21): Submission ID 88bce97e-4f03-4429-b21b-cf36aba86dcb (2020);*
- *Journal of Engineered Fibers and Fabrics (M22): Manuscript ID JEFF-D-16-00020 (2016);*
- *Colloids and Surfaces A: Physicochemical and Engineering Aspects (M22): Manuscript ID COLSUA-D-20-02139R1 (2020).*

Kao dokaz, dostavljene su potvrde o recenziranju.

KVANTITATIVNA OCENA NAUČNIH REZULTATA

Pregled ukupnih koeficijenata naučne kompetentnosti dr Stoje Milovanović posle izbora u naučno zvanje naučni saradnik je prikazan u Tabeli 1.

Tabela 1: Pregled ukupnih koeficijenata naučne kompetentnosti

Naziv grupe	Vrsta rezultata	Oznaka rezultata	Vred. koef.	Br. radova	Σ
Radovi objavljeni u naučnim časopisima međunarodnog značaja	Poglavlje u knjizi međunarodnog značaja	M14	4	1	4
	Rad u vrhunskom međunarodnom časopisu izuzetnih vrednosti	M21a	10	1	10
	Rad u vrhunskom međunarodnom časopisu	M21	8	8	59,05*
	Rad u istaknutom međunarodnom časopisu	M22	5	1	5
	Rad objavljen u međunarodnom časopisu	M23	3	3	9
	Vrhunski časopis nacionalnog značaja	M51	2	1	2
Tehnička rešenja i razvojna rešenja	Novo tehničko rešenje u fazi realizacije	M85	2	2	4
Patent	Registrovan patent na nacionalnom nivou	M92	12	2	24
Ukupno					111,05

*Tri rada kategorije M21 su normirana (dva rada 6,67 umesto 8 poena i jedan rad 5,71 umesto 8 poena).

Minimalni kvantitativni zahtevi za sticanje naučnog zvanja viši naučni saradnik za tehničko-tehnološke i biotehničke nauke

Diferencijalni uslov od prvog izbora u zvanje naučni saradnik do izbora u zvanje viši naučni saradnik	**Neophodno**	**Ostvareno**
Ukupno	50	126,05
Obavezni (1): M10+M20+M31+M32+M33+M41+M42+M51+M80+M90+M100	40	116,05
Obavezni (2)* M21+M22+M23+M81-85+M90-96+M101-103+M108	22	111,05
M21+M22+M23	11	83,05
M81-85+M90-96+M101-103+M108	7	28

ZAKLJUČAK

Na osnovu uvida u priloženu dokumentaciju i ostvarenih kvantitativnih i kvalitativnih rezultata kandidatkinje, Komisija za utvrđivanje naučne kompetentnosti konstatuje da rezultati naučno-istraživačkog rada dr Stoje Milovanović predstavljaju značajan naučni doprinos razvoju novih procesa dobijanja materijala sa dodatom vrednošću. Stoja Milovanović je objavila ukupno 4 poglavlja, 30 radova, 4 tehnička rešenja, 4 patenta i 32 saopštenja na konferencijama. Ukupan zbir impakt faktora objavljenih radova kandidatkinje iznosi **71,988**, citirani su **337** puta (bez autocitata), a Hiršov indeks *(h*-index) je **13** što ukazuje na njihovu veliku uticajnost. Nakon izbora u prethodno zvanje kandidatkinja je objavila ukupno 13 radova sa SCI liste i to 1 rad u vrhunskom međunarodnom časopisu izuzetnih vrednosti (M21a), 8 radova u vrhunskom međunarodnom časopisu (M21), 1 rad u istaknutom međunarodnom časopisu (M22), 3 rada u međunarodnom časopisu (M23). Kandidatkinja je nakon izbora u prethodno zvanje objavila i 1 poglavlje u knjizi međunarodnog značaja (M14), 1 poglavlje u međunarodnoj knjizi (bez kategorije), 1 rad u vrhunskom časopisu nacionalnog značaja (M52), 2 tehnička rešenja (M85) priznata od Matičnog naučnog odbora za materijale i hemijske tehnologije i 2 registrovana patenta na nacionalnom nivou (M92). Takođe, učestvovala je u većem broju naučnih skupova međunarodnog značaja na kojima je prezentovala rezultate svog naučno-istraživačkog rada. Kandidatkinja je pokazala izuzetan nivo samostalnosti i kreativnosti u planiranju i vođenju eksperimenata, analizi i obradi rezultata, kao i u pisanju radova. Pored angažovanja u realizaciji nacionalnog projekta, dr Stoja Milovanović je bila angažovana na jednom međunarodnom projektu i trenutno je angažovana na realizaciji 3 međunarodna projekta. Rezultati naučno-istraživačkog rada dr Stoje Milovanović predstavljaju značajan doprinos razvoju novih „zelenih“ postupaka za dobijanje biodegradabilnih materijala sa bioaktivnih dejstvom koji mogu naći primenu u farmaceutskoj, prehrambenoj i tekstilnoj industriji. Aktivno učestvuje u promociji fakulteta na sajmovima i u srednjim školama. Pored toga, aktivna je i u formiranju nacionalnog i inostranog naučnog podmlatka kroz izrade diplomskih, završnih, master i doktorskih radova, kao i kroz prakse stranih studenata. Dr Stoja Milovanović je bila član komisije za ocenu i odbranu doktorske disertacije.

Na osnovu ostvarenih rezultata, Komisija smatra da su postignuti rezultati naučno-istraživačkog rada kandidatkinje značajni i da dr Stoja Milovanović ispunjava sve uslove za sticanje naučnog zvanja VIŠI

NAUČNI SARADNIK u oblasti Tehničko-tehnoloških nauka u skladu sa Pravilnikom o postupku i načinu vrednovanja i kvantitativnom iskazivanju naučno-istraživačkih rezultata istraživača ("Sl. glasnik RS“ br. 24/2016, 21/2017 i 38/2017).

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