Dr. Bahareh Khezri

Ph.D.-Chemistry

Date of birth: 16.03.1980, Esfahan, Iran

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INTERNATIONAL MOBILITY

M.Sc. (**Iran**), PhD. (**Singapore**), Research Fellow at Nanyang Technological University (**Singapore**), Senior Research Fellow at Cambridge University-Singapore Centre (**Singapore**), Visiting researcher at Cambridge University (**United Kingdom**), Senior Scientist (**Czech Republic**), Principal Investigator (**Czech Republic**), Beatriu de Pinós fellow (**Catalonia, Spain**), Ramon y Cajal Investigator (**Spain**).

SUMMARY

Currently, Dr. Bahareh Khezri is holding a joint appointment as "Ramon y Cajal Investigator" at URV and "Associated Researcher" at ICIQ. She is the head of the “Advanced Functional Materials for Green Energy and Robotics: AFM-GE&R” research group, which operates at the forefront of nanoscience. AFM-GE&R focuses on designing and developing hybrid materials for energy-related applications such as water splitting and CO_2 reduction, as well as artificial self-propelled micro/nanorobots for various purposes. The group's research interests are centered around creating functional nanostructured hybrid materials and using them as photo/electrocatalysts for energy applications, and using them as scaffolds for encapsulating, storing, reacting, collecting, degrading, and delivering molecules of interest. AFM-GE&R's main contributions are in the design and development of hybrid functional materials, including doped/functionalized 2Ds beyond graphene and sustainable materials, which have countless applications in Energy, Catalysis, the Environment, and Life Science.

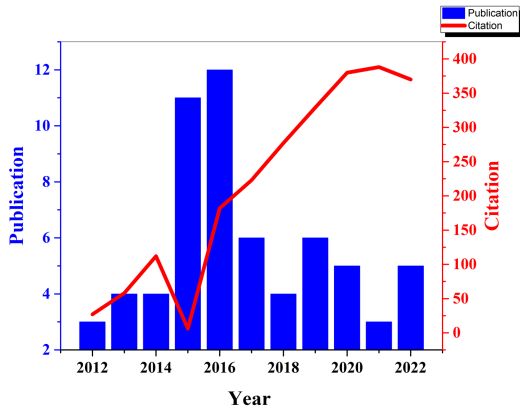
Previous steps:

I studied Chemistry at Isfahan University of Technology and Isfahan University, as BSc (1999-2001) and MSc (2003-2006) in Iran. At 2008 I was granted the prestige Singapore International Graduate Award (SINGA). As a result, I joined the distinguished research group of Professor Richard D. Webster at Nanyang Technological University, Singapore, for my PhD (2008-2012), where I conducted research on the chemical composition of airborne particulate matter ($PM_{2.5}$ and PM_{10}), aerosols ($PM_{2.5}$), inorganic trace gases, and precipitation in Singapore which involved close collaboration with the Singapore National Environmental Agency and Singapore’s national defense research and development organization, as well as world-leading instrumental chemistry companies Waters and Metrohm. By the end of 2012, we gathered four years’ worth of data to investigate the impact of local and transboundary events on Singapore air quality. After finishing my PhD, I was granted A*STAR postdoctoral fellowship that mandated me to explore a new research area beyond my previous expertise as an independent postdoctoral researcher (2012-2014). Where I made a significant shift in my research focus from analytical (instrumental) chemistry to electrochemistry. In January 2015, I joined the Cambridge Centre for Advanced Research and Education in Singapore (CARES). This organization represented the University of Cambridge’s presence in Singapore and was sponsored by the Singapore national research fund (NRF). This Cambridge Centre research program served the Carbon Reduction in Chemical Technology (C4T) initiative. Once again, I refined my interests and changed my direction towards material chemistry, nanotechnology, and energy research. I was involved in the research of the group “Electrochemical Multi-scale Science, Engineering and Technology (EMSET)”. In this group, we worked to discover innovative multiscale electrochemical characterizations and analyses. My colleagues and I targeted the development of multi-scale

electroanalytical tools for the investigation of catalytic reactions and the adoption of electro-synthesis as a potential source for clean and selective routes for chemical production. As my work required substantial knowledge of nano/microfabrication, I trained in microfluidic and reactor fabrication at the University of Cambridge. Under the tutelage of nanotechnology, electrochemistry, and microreactor professions, I had the brilliant to broaden my research area in different fields. In November 2017, I moved to Advanced Functional Nanorobots at University of Chemistry and Technology, Prague (VSCHT) directed by Prof. Martin Pumera where I gained more experience in 2D-materials, synthesis and exfoliation, water splitting, 3D printing and synthetic micro/nanorobots. In December 2019, I received a research grant from the Czech science foundation for my proposal entitled "Layered material-based micromachines: Towards Biomedical and Environmental application". In January 2020 I appointed as Principal Investigator at Inorganic Department of University of Chemistry and Technology, Prague to lead my own research group including a PhD student and postdocs. The main result of this project has been published in Nature Intelligent Machine, ACS Catalysis, Small Methods to name a few. After receiving the Beatriu de Pinós fellowship in 2021, in November 2021 I moved to "Institut Català d'Investigació Química" to expand my expertise in energy application in the research group of Jose Ramon Galan Mascarós where I also learned about polyoxometalate as promising molecular catalyst. By achieving Ramon y Cajal 2020 grant, I accepted an offer from URV where I am consolidating my scientific independence to grew as a leader of my own research group with focus in design and development of advanced smart materials for green energy application and robotic nanodevices collaborating with URV professors who are working in the development of nanomaterials for optical and catalytic applications. Offering joint affiliation from ICIQ gives me the opportunity to carry out a part of my research at ICIQ and maintain my collaborations with the ICIQ's research group in renewable energy align with The Hydrogen Valley of Catalonia's mission and vision.

EARLY ACHIEVMENT TRACK RECORD

So far, I have co-authored **63 publications** in peer-reviewed scientific journals (62) and conference proceedings (1). My work has been published in top-ranked journals such as Nature Machine intelligence, Chem, Advanced Materials, Advanced Functional Materials, ACS Nano, Angewandte Chemie, Small Methods, Small and JACS. My h-index is 28 (web of science) and my articles have received more than 2500 citations. Many of my works have been highlighted on the cover of scientific journals and in Advanced Science News An up-to-date full list of publications can be found in the Web of Science database under my research ID (https://www.webofscience.com/wos/author/record/E-2080-2011).



EDUCATION

2009 –2013 PhD in Chemistry
Chemistry and biological chemistry division (CBC), School of Physical and Mathematical Sciences (SPMS), College of Science at Nanyang Technological University (NTU), Singapore.
Thesis: The chemical composition of airborne particulate matter ($PM_{2.5}$ and PM_{10}), aerosols ($PM_{2.5}$), inorganic trace gases, and precipitation in Singapore
Supervisor: Richard D. Webster

2004 –2006 Master of Science
Chemistry Department, College of Science at Isfahan University, Isfahan, Iran.
Thesis: Optical chemical sensors (optodes) for detection of heavy metals
Supervisor: Mohammad K. Amini

1999 –2002 Bachelor of Science
Chemistry Department, College of Science at the Isfahan University of Technology, Isfahan, Iran.
Final year project title: Optical Chemical Sensors
Supervisor: Taghi Khayyamian

PROFESSIONAL SCIENTIFIC EXPERIENCE

Period	Institute	Position	City, Country
1.09.2022 – 31.08.2027	Universitat Rovira i Virgili and Institut Català d'Investigació Química	Ramon y Cajal Investigator (PI)	Tarragona, Spain
15.10.2021 – 31.08.2022	Institut Català d'Investigació Química	Beatriu Pinos Fellow Mentor Prof Jose Ramon Galan Mascaros	Tarragona, Spain
01.01.2020 – 31.12.2022	Inorganic Chemistry Department, University of Chemistry and Technology Prague	Principal Investigator (PI) Head of the department: Prof. David Sedmidubsky	Prague, CZ.
01.10.2017 – 31.12.2020	Advanced Functional Nanorobots, University of Chemistry and Technology Prague	Senior Scientist Mentor: Prof. Martin Pumera	Prague, CZ.
01.01.2015 – 31.09.2017	Cambridge Centre for Advanced Research and Education in Singapore (CARES) and University of Cambridge	Senior Research Fellow Mentors: Prof. Adrian C. Fisher (Cambridge), Prof. Martin Pumera (Singapore) Director of CARES: Prof. Markus Kraft	Singapore Cambridge, UK
01.04.2013 – 31.12.2014	Nanyang Technological University	Research Fellow Mentor: Prof. Richard D. Webster	Singapore
010.09.2012– 01.04.2013	Nanyang Technological University	Research Associate Mentor: Prof. Richard D. Webster	Singapore

CARRER BREAK

01.11.2015-01.07.2016 Due to maternity leave.

PUBLICATIONS

2023

63. Lukas Dekanovsky, Yulong Ying, Zdenek Sofer, **Bahareh Khezri***. Light-driven Mxene-based microrobots: mineralization of BPA to CO_2 and H_2O, *Small Methods* Accepted **2023.** Impact Factor (IF): 15.367 (JCR 2021); 1st Decile 15/165 (Chemistry, Physical); 1st Decile 24/345 (Materials Science, Multidisciplinary); 1st Decile 13/109 (Nanoscience & Nanotechnology). Source: Web of Science (WS).

62. Reshmi Das; Wang Xianfeng; **Khezri Bahareh**; Richard D. Webster; Itoh Masatuki; Shiodera Satomi; Bin Mohamed Mohtar Ahmad Taufiq; Kuwata Mikinori. Suspension of Crustal Materials from Wildfire in Indonesia as Revealed by Pb Isotope Analysis. *ACS Earth Space Chem.* **2023**. DOI: 10.1021/ACSEARTHSPACECHEM.2C00270. IF: 3.556 (JCR 2021); 89/179 (Chemistry, Multidisciplinary) (WS).

2022

61. **Bahareh Khezri**, Katherine Villa. Hybrid Photoresponsive/Biocatalytic Micro- and Nanoswimmers. *Chemistry-An Asian Journal*. 17, e202200596, **2022**. DOI: 10.1002/ASIA.202200596. IF: 4.839 (JCR 2021); 67/179 (Chemistry, Multidisciplinary). (WS).

60. Lukáš Děkanovský*; Jalal Azadmanjiri; Martin Havlík; Pal Bhupender; Jiří Šturala; Vlastimil Mazánek; Alena Michalcová; Lunjie Zeng; Eva Olsson; **Bahareh Khezri***; Zdeněk Sofer*. Universal Capacitance Boost—Smart Surface Nanoengineering by Zwitterionic Molecules for 2D MXene Supercapacitor. *Small Methods* 2201329. **2022.** DOI: 10.1002/SMTD.202201329. (IF): 15.367 (JCR 2021); 1st Decile 15/165 (Chemistry, Physical); 1st Decile 24/345 (Materials Science, Multidisciplinary); 1st Decile 13/109 (Nanoscience & Nanotechnology). Citations: 1 (WS).

59. Lukáš Děkanovský; Jan Plutnar; Jiří Šturala; Jiří Brus; Jiří Kosina; Jalal Azadmanjiri; David Sedmidubský; Zdeněk Sofer, **Bahareh Khezri***. Multifunctional Photoelectroactive Platform for CO_2 Reduction toward C_{2+} Products─Programmable Selectivity with a Bioinspired Polymer Coating. *ACS Catalysis.* 12 - 2, 1558 – 1571, **2022**. DOI: 10.1021/ACSCATAL.1C03629. IF: 13.700 (JCR 2021); 1st Quartile 19/165 (Chemistry, Physical). Citations: 5 (WS).

58. Jinhua Li; Lukas Dekanovsky; **Bahareh Khezri**; Bing Wu; Huaijuan Zhou; Zdenek Sofer. Biohybrid Micro- and Nanorobots for Intelligent Drug Delivery. *Cyborg and Bionic Systems* 9824057, **2022**. DOI: 10.34133/2022/9824057. Open Acces (OA) Citations: 8 (WS).

57. Jalal Azadmanjiri; Thuniki Naveen Reddy; **Bahareh Khezri**; Lukáš Děkanovský; Abhilash Karuthedath Parameswaran; Bhupender Pal; Saeed Ashtiani; Shuangying Wei. Prospective advances in MXene inks: screen printable sediments for flexible micro-supercapacitor applications. *Journal of Materials Chemistry A* 10, 4533 – 4557, **2022**. DOI: 10.1039/D1TA09334G. IF: 14.511 (JCR 2021); 1st Decile 9/119 (Energy & Fuels); 1st Decile 26/345 (Materials Science, Multidisciplinary); Citations: 11 (WS).

56. Lukáš Děkanovský; Jinhua Li; Huaijuan Zhou; Zdenek Sofer **Bahareh Khezri*** Nano/Microrobots Line Up for Gastrointestinal Tract Diseases: Targeted Delivery, Therapy, and Prevention. *Energies*. 15, 2, 426, **2022**. DOI: 10.3390/EN15020426 (OA). IF: 3.252 (JCR 2021); 80/119 (Energy & Fuels); Citations: 4 (WS).

2021

55. Huaijuan Zhou; Bing Wu; Lukas Dekanovsky; Shuangying Wei; **Bahareh Khezri**; Tomas Hartman; Jinhua Li; Zdenek Sofer. Integration of BiOI nanosheets into bubble-propelled micromotors for efficient water purification. *FlatChem.* 30, 2452 – 2627, **2021**. DOI: 10.1016/J.FLATC.2021.100294 (OA). IF: 5.829 (JCR 2021); 59/165 (Chemistry, Physical); Citations: 6 (WS).

54. **Bahareh Khezri**; Yulong Ying; Jiri Kosina; Martin Pumera. Reconstructed Bismuth-Based Metal−Organic Framework Nanofibers for Selective CO_2-to-Formate Conversion: Morphology Engineering. *ChemSusChem.* 14, 3402, **2021**. DOI: 10.1002/CSSC.202101122. IF: 9.140 (JCR 2021); 1st Quartile 11/47 (Green & Suistainable Science & Technology); 1st Quartile 30/179 (Chemistry, Multidisciplinary). Citations: 8 (WS).

53. Yaroslav S. Kochergin; Seyyed Mohsen Beladi-Mousavi; **Bahareh Khezri**; Pengbo Lyu; Michael J. Bojdys; Martin Pumera. Organic photoelectrode engineering: accelerating photocurrent generation via donor–acceptor interactions and surface-assisted synthetic approach. *Journal of Material Chemistry A*. 9, 7162 – 7171, **2021**. DOI: 10.1039/D0TA11820F. IF: 14.511 (JCR 2021); 1st Decile 9/119 (Energy & Fuels); 1st Decile 26/345 (Materials Science, Multidisciplinary); Citations: 6 (WS).

2020

52. Lukas Dekanovsky; **Bahareh Khezri***; Zdeňka Rottnerova; Filip Novotny; Jan Plutnar; Martin Pumera. Chemically programmable microrobots weaving a web from hormones. *Nature Machine Intelligence*. 2 - 11, 711 - 718, **2020**. DOI: 10.1038/S42256-020-00248-0. IF:25.898 (JCR 2021); 1st Decile 2/156 (Computer Science, interdisciplinary applications); 1st Decile 2/156 (Computer Science, Artificial Intelligence). Citations: 29 (WS).

51. **Bahareh Khezri**; Katherine Villa; Filip Novotný; Zdeněk Sofer; Martin Pumera. Smartdust 3D-Printed Graphene-Based Al/Ga Robots for Photocatalytic Degradation of Explosives. *Small*. 16, 2002111. **2020**. DOI: 10.1002/SMLL.202002111. IF:13.281 (JCR 2020); 1st Decile 14/162 (Chemistry, Physical); 1st Decile 11/160 (Physics, Applied); 1st Decile 25/345 (Material Science, Multidisciplinary); Citations: 11 (WS).

50. **Bahareh Khezri**; Filip Novotný; James Guo Sheng Moo; Muhammad Zafir Mohamad Nasir; Martin Pumera. Confined Bubble-Propelled Microswimmers in Capillaries: Wall Effect, Fuel Deprivation, and Exhaust Product Excess. *Small* 16, 2000413, **2020**. DOI: 10.1002/SMLL.202000413. 2020. IF:15.153 (JCR 2021); 1st Decile 18/179 (Chemistry, Multidisciplinary); 1st Decile 17/165 (Chemistry, Physical); Citations: 5 (WS).

49. Seyyed Mohsen Beladi-Mousavi; Jonas Klein; **Bahareh Khezri**; Lorenz Walder. Active Anion Delivery by Self-Propelled Microswimmers. *ACS Nano*. 14 - 3, 3434 – 3441, **2020**. DOI: 10.1021/ACSNANO.9B09525. IF:18.027 (JCR 2021); 1st Decile 12/165 (Chemistry, Physical); 1st Decile 13/1179 (Material Science, Multidisciplinary); Citations: 23 (WS).

2019

48. Seyyed Mohsen Beladi-Mousavi; **Bahareh Khezri**, Ludmila Krejčová; Zbyněk Heger; Zdeněk Sofer; Adrian C. Fisher; Martin Pumera. Recoverable Bismuth-Based Microrobots: Capture, Transport, and On-Demand Release of Heavy Metals and an Anticancer Drug in Confined Spaces. *ACS Applied Materials and Interfaces*. 11, 14, 13359 – 13369, **2019**. DOI: 10.1021/ACSAMI.8B19408. IF:10.383 (JCR 2021); 1st Decile 23/109 (Nanoscience & Nanotechnology); 1st Decile 49/345 (Chemistry, Multidisciplinary); Citations: 28 (WS).

47. **Bahareh Khezri**; Martin Pumera. Metal–Organic Frameworks Based Nano/Micro/Millimeter-Sized Self-Propelled Autonomous Machines. *Advanced Materials* 31, 1806530, **2019**. DOI: 10.1002/ADMA.201806530. IF:32.086 (JCR 2021); 1st Decile 5/179 (Chemistry, Multidisciplinary); 1st Decile 4/165 (Chemistry, Physics); 1st Decile 8/345 (Material Science, Multidisciplinary); 1st Decile 3/109 (Nanoscience & Nanotechnology); Citations: 38 (WS).

46. Tijana Maric; Seyyed Mohsen Beladi-Mousavi; **Bahareh Khezri**; Jiri Sturala; Muhammad Zafir Mohamad Nasir; Richard D. Webster; Martin Pumera. Functional 2D Germanene Fluorescent Coating of Microrobots for Micromachines Multiplexing. *Small* **2019**. DOI: 10.1002/SMLL.202000413. IF:15.153 (JCR 2021); 1st Decile 18/179 (Chemistry, Multidisciplinary); 1st Decile 17/165 (Chemistry, Physical); 1st Decile 25/345 (Material Science, Multidisciplinary); 1st Decile 14/109 (Nanoscience & Nanotechnology); Citations: 24 (WS).

45. Seyyed Mohsen Beladi-Mousavi; **Bahareh Khezri**; Stanislava Matějková; Zdeněk Sofer; Martin Pumera. Supercapacitors in Motion: Autonomous Microswimmers for Natural-Resource Recovery. *Angewandte Chemie International Edition* 131, 38, 13474 – 13478, **2019**. DOI: 10.1002/ANIE.201906642. IF:16.823 (JCR 2021); 1st Decile 15/179 (Chemistry, Multidisciplinary); Citations: 13 (WS).

44. **Bahareh Khezri**; Seyyed Mohsen Beladi Mousavi; Zdeněk Sofer; Martin Pumera. Recyclable nanographene-based micromachines for the on-the-fly capture of nitroaromatic explosives. *Nanoscale* 11, 18, 8825 – 8834, **2019**. DOI: 10.1039/C9NR02211B. IF:8.307 (JCR 2021); 1st Decile 37/179 (Chemistry, Multidisciplinary); 1st Decile 70/345 (Material Science, Multidisciplinary); Citations: 17 (WS).

2018

43. **Bahareh Khezri**; Seyyed Mohsen Beladi Mousavi; Ludmila Krejčová; Zbyněk Heger; Zdeněk Sofer; Martin Pumera. Ultrafast electrochemical trigger drug delivery mechanism for nanographene micromachines. *Advanced Functional Materials*. 29, 1806696, **2018**. DOI: 10.1002/ADFM.201806696 IF:19.924 (JCR 2021); 1st Decile 10/179 (Chemistry, Multidisciplinary); 1st Decile 10/165 (Chemistry, Physical); 1st Decile 17/345 (Material Science, Multidisciplinary); 1st Decile 8/109 (Nanoscience & Nanotechnology); Citations: 61 (WS).

42. Naziah M. Latiff; Carmen C. Mayorga-Martinez; **Bahareh Khezri**; Katerina Szokolova; Zdeněk Sofer; Adrian C. Fisher. Cytotoxicity of layered metal phosphorus chalcogenides (MPXY) nanoflakes; $FePS_3$, $CoPS_3$, $NiPS_3$. *FlatChem*. 12, 1 – 9, **2018**. DOI: 10.1016/J.FLATC.2018.11.003. (OA) IF:5.829 (JCR 2021); 1st Decile 108/345 (Material Science, Multidisciplinary); 1st Decile 59/165 (Chemistry, Physical); Citations: 15 (WS).

41. Tijana Maric; Carmen C. Mayorga-Martinez; **Bahareh Khezri**; Muhammad Zafir Mohamad Nasir; Xinyi Chia; Martin Pumera. Nanorobots Constructed from Nanoclay: Using Nature to Create Self-Propelled Autonomous Nanomachines. *Advanced Functional Materials*. 28, 1802762, **2018**. DOI: 10.1002/ADFM.201802762. IF:19.924 (JCR 2021); 1st Decile 10/179 (Chemistry, Multidisciplinary); 1st Decile 10/165 (Chemistry, Physical); 1st Decile 17/345 (Material Science, Multidisciplinary); 1st Decile 8/109 (Nanoscience & Nanotechnology); Citations: 34 (WS).

40. Carmen C. Mayorga-Martinez; Zdeněk Sofer; David Sedmidubský; Jan Luxa; **Bahareh Kherzi**; Martin Pumera. Metallic impurities in black phosphorus nanoflakes prepared by different synthetic routes. *Nanoscale.* 10, 1540 – 1546, **2018**. DOI10.1039/c7nr05718k. IF:8.307 (JCR 2021); 1st Decile 37/179 (Chemistry, Multidisciplinary); 1st Decile 70/345 (Material Science, Multidisciplinary); 2nd Decile 81/165 (Nanoscience & Nanotechnology); 1st Decile 81/165 (Physics, Applied); Citation: 22 (WS).

39. Tijana Maric; Muhammad Zafir Mohamad Nasir; Yong Wang; **Bahareh Khezri;** Martin Pumera. Corrosion due to ageing influences the performance of tubular platinum microrobots. *Nanoscale* 10, 1322 – 1325, **2018**. DOI: 10.1039/C7NR05775J. IF:8.307 (JCR 2021); 1st Decile 37/179 (Chemistry, Multidisciplinary); 1st Decile 70/345 (Material Science, Multidisciplinary); 2nd Decile 81/165 (Nanoscience & Nanotechnology); 1st Decile 81/165 (Physics, Applied); Citation: 6 (WS).

2017

38. Chencheng Dai; Libo Sun; Hanbin Liao; **Bahareh Khezri**; Richard D. Webster; Adrian C. Fisher; Zhichuan J. Xu. Electrochemical production of lactic acid from glycerol oxidation catalyzed by AuPt. *Journal of Catalysis* 356, 14 – 21, **2017**. DOI: 10.1016/J.JCAT.2017.10.010. IF:8.047 (JCR 2021); 1st Decile 39/165 (Chemistry, Physical); 1st Decile 18/143 (Engineering, Chemical); Citation: 82 (WS).

37. Maja Budanović; **Bahareh Khezri**; Sherman J.L. Lauw; Malcolm E. Tessensohn; Richard D. Webster. Tetrathiafulvalene aids in the atomic spectroscopic determination of total mercury. *Analytica Chimica Acta* 992, 24 - 33, **2017**. DOI: 10.1016/J.ACA.2017.08.052. IF:6.911 (JCR 2021); 1st Decile 10/87 (Chemistry, Analytical); Citation: 2 (WS).

36. Tijana Maric; James Guo Sheng Moo; **Bahareh Khezri**; Zdeněk Sofer; Martin Pumera. Black-phosphorus-enhanced bubble-propelled autonomous catalytic microjets. *Applied Materials Today* 9, 289 – 291, **2017**. DOI: 10.1016/J.APMT.2017.08.007. IF:8.663 (JCR 2021); 1st Decile 64/345 (Material Science, Multidisciplinary); Citation: 20 (WS).

35. Hong Wang; Michael G. Potroz; Joshua A. Jackman; **Bahareh Khezri**; Tijana Marić; Nam-Joon Cho; Martin Pumera. Bioinspired Spiky Micromotors Based on Sporopollenin Exine Capsules. *Advanced Functional Materials* 27,

1702338, **2017**. DOI: 10.1002/ADFM.201702338. IF:19.924 (JCR 2021); 1st Decile 10/179 (Chemistry, Multidisciplinary); 1st Decile 10/165 (Chemistry, Physical); 1st Decile 17/345 (Material Science, Multidisciplinary); 1st Decile 8/109 (Nanoscience & Nanotechnology); Citations: 61 (WS).

34. **Bahareh Khezri**; Adrian C. Fisher; Martin Pumera. CO_2 reduction: the quest for electrocatalytic materials. *Journal of Materials Chemistry A.* 5, 18, 8230 – 8246, **2017**. DOI: 10.1039/C6TA09875D. IF:14.511 (JCR 2021); 1st Decile 9/119 (Energy&Fuel); 1st Decile 18/165 (Chemistry, Physical); 1st Decile 26/345 (Material Science, Multidisciplinary); Citations: 176 (WS).

33. James Guo Sheng Moo; Carmen C. Mayorga-Martinez; Hong Wang; **Bahareh Khezri**; Wei Zhe Teo; Martin Pumera. Nano/Microrobots Meet Electrochemistry. *Advanced Functional Materials.* 27, 1604759, **2017**. DOI: 10.1002/ADFM.201604759. IF:19.924 (JCR 2021); 1st Decile 10/179 (Chemistry, Multidisciplinary); 1st Decile 10/165 (Chemistry, Physical); 1st Decile 17/345 (Material Science, Multidisciplinary); 1st Decile 8/109 (Nanoscience & Nanotechnology); Citations: 59 (WS).

2016

32. **Bahareh Khezri**; James Guo Sheng Moo; Peng Song; Adrian C. Fisher; Martin Pumera. Detecting the complex motion of self-propelled micromotors in microchannels by electrochemistry. *RSC Advances* 6, 102, 99977 – 99982, **2016**. DOI: 10.1039/C6RA22059B. IF:4.036 (JCR 2021); 1st Decile 75/179 (Chemistry, Multidisciplinary); Citations: 11 (WS).

31. Hong Wang; **Bahareh Khezri**; Martin Pumera. Catalytic DNA-Functionalized Self-Propelled Micromachines for Environmental Remediation. *The Chem*. 1, 3, 473 – 481, **2016**. DOI: 10.1016/J.CHEMPR.2016.08.009. DOI: 10.1016/J.CHEMPR.2016.08.009. IF:25.832 (JCR 2021); 1st Decile 6/179 (Chemistry, Multidisciplinary); Citations: 53 (WS).

30. Huey Ting Diong; Reshmi Das; **Bahareh Khezri**; Bijayen Srivastava; Xianfeng Wang; Pradip K. Sikdar; Richard D. Webster. Anthropogenic platinum group element (Pt, Pd, Rh) concentrations in PM_{10} and $PM_{2.5}$ from Kolkata, India. *SpringerPlus.* 4, 1224, **2016**. DOI10.1186/s40064-016-2854-5. IF:1.130 (JCR 2016); 2nd Decile 6/179 (Multidisciplinary Science); Citations: 13 (WS).

29. Chun Kiang Chua; Zdeněk Sofer; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Ball-milled sulfur-doped graphene materials contain metallic impurities originating from ball-milling apparatus: their influence on the catalytic properties. *Physical Chemistry Chemical Physics*. 18, 27, 17875 – 17880, **2016**. DOI: 10.1039/C6CP03004A. IF:3.945 (JCR 2021); 1st Decile 9/36 (Physics, Atomic, Molecular & Chemical); 2nd Decile 81/165 (Chemistry, Physical); Citations: 32 (WS).

28. **Bahareh Khezri**; Martin Pumera. Self-propelled autonomous nanomotors meet microfluidics. *Nanoscale*. 8, 40, 17415 – 17421, **2016**. DOI10.1039/c6nr06665h. IF:8.307 (JCR 2021); 1st Decile 37/179 (Chemistry, Multidisciplinary); 1st Decile 70/345 (Material Science, Multidisciplinary); 2nd Decile 81/165 (Nanoscience & Nanotechnology); 1st Decile 81/165 (Physics, Applied); Citations: 41 (WS).

27. Zhiyong Lam; Ghayathri Balasundaram; Kien Voon Kong; Bo Yang Chor; Douglas Goh; **Bahareh Khezri**; Richard D. Webster; Weng Kee Leong; Malini Olivo. High nuclearity carbonyl clusters as near-IR contrast agents for photoacoustic in vivo imaging. *Journal of Material Chemistry B.* 4, 3886 – 3891, **2016**. IF:7.571 (JCR 2021); 1st Decile 10/45 (Material Science, Biomaterial); Citations: 6 (WS).

26. Carmen C. Mayorga-Martinez; James Guo Sheng Moo; Bahareh Khezri; Peng Song; Adrian C. Fisher; Zdenek Sofer; Martin Pumera. Self-Propelled Supercapacitors for On-Demand Circuit Configuration Based on WS2 Nanoparticles Micromachines, *Advanced Functional Materials* 12, 36, 6662-6667, **2016**. DOI10.1002/adfm.201601165. IF:19.924 (JCR 2021); 1st Decile 10/179 (Chemistry, Multidisciplinary); 1st Decile 10/165 (Chemistry, Physical); 1st Decile 17/345 (Material Science, Multidisciplinary); 1st Decile 8/109 (Nanoscience & Nanotechnology); Citations: 60 (WS).

25. Carmen C. Mayorga-Martinez; **Bahareh Khezri**; Alex Yong Sheng Eng; Zdeněk Sofer; Pavel Ulbrich; Martin Pumera. Bipolar Electrochemical Synthesis of WS_2 Nanoparticles and Their Application in Magneto-Immunosandwich Assay. *Advanced Functional Materials* 26, 23, 4094 – 4098, **2016**. DOI: 10.1002/ADFM.201600961. IF:19.924 (JCR 2021); 1st Decile 10/179 (Chemistry, Multidisciplinary); 1st Decile 10/165 (Chemistry, Physical); 1st Decile 17/345 (Material Science, Multidisciplinary); 1st Decile 8/109 (Nanoscience & Nanotechnology); Citations: 34 (WS).

24. Kee Chun Poon; **Bahareh Khezri**; Yao Li; Richard D. Webster; Haibin Su; Hirotaka Sato. A highly active Pd–P nanoparticle electrocatalyst for enhanced formic acid oxidation synthesized via stepwise electroless deposition. *Chemical Communications* 52, 17, 3556 – 3559, **2016**. DOI: 10.1039/C5CC08669H. IF:19.924 (JCR 2021); 2nd Decile 53/179 (Chemistry, Multidisciplinary); Citations: 41 (WS).

23. Reshmi Das; Xianfeng Wang; **Bahareh Khezri**; Richard D. Webster; Pradip Kumar Sikdar; Subhajit Datta. Mercury isotopes of atmospheric particle bound mercury for source apportionment study in urban Kolkata, India. *Elementa: Science of the Anthropocene* 4, 000098, **2016**. DOI: 10.12952/JOURNAL.ELEMENTA.000098. IF: 4.259; Citation: 33 (WS).

22. Tat Thang Vo Doan; Jingbo Wang; Kee Chun Poon; Desmond C. L. Tan; **Bahareh Khezri**; Richard D. Webster; Hanbin Su; Hiritaka Sato. Theoretical Modelling and Facile Synthesis of a Highly Active Boron-Doped Palladium

Catalyst for the Oxygen Reduction Reaction. *Angewandte Chemie International Edition* 55, 25, 6842, **2016**. DOI10.1002/anie.201601727. IF:19.924 (JCR 2021); 1st Decile 15/179 (Chemistry, Multidisciplinary); Citations: 34 (WS).

2015

21. Reshmi Das; **Bahareh Khezri**; Bijayen Srivastava; Subhajit Datta; Pradip K. Sikdar; Richard D. Webster; Xianfeng Wang. Trace element composition of $PM_{2.5}$ and PM_{10} from Kolkata – a heavily polluted Indian metropolis. *Atmospheric Pollution Research*. 6, 5, 742 – 750, **2015**. DOI: 10.5094/APR.2015.083. IF:4.831 (JCR 2021); 2nd Decile 93/279 (Environmental Science); Citations: 120 (WS).

20 Lu Wang; Chun Kiang Chua; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Remarkable electrochemical properties of electrochemically reduced graphene oxide towards oxygen reduction reaction are caused by residual metal-based impurities. *Electrochemistry Communications* 62, 17 – 20, **2015**. DOI: 10.1016/J.ELECOM.2015.10.020. IF:5.443 (JCR 2021); 2nd Decile 93/279 (Electrochemistry); Citations: 28 (WS).

19. Desmond C. L. Tan; **Bahareh Khezri**; Wannipha Amatyakul; Richard D. Webster; Hirotaka Sato. A facilely synthesized highly active Pd nanoparticle electrocatalyst for electroless deposition process. *RSC Advances* 5, 108, 88805 – 88808, **2015**. DOI: 10.1039/C5RA17151B. IF:5.443 (JCR 2021); 2nd Decile 75/179 (Chemistry, Multidisciplinary); Citations: 8 (WS)

18. **Bahareh Khezri**; Yayun Chan; Richard D. Webster. Annual air pollution caused by the Hungry Ghost Festival. *Environmental Science: Processes & Impacts* 17, 1578 – 1586, **2015**. DOI: 10.1039/C5EM00312A. IF:5.334 (JCR 2021); 1st Decile 16/87 (Chemistry, Analytical); 2nd Decile 84/279 (Environmental Science); Citations: 22 (WS)

17. Lu Wang; Colin Hong An Wong; **Bahareh Kherzi**; Richard D. Webster; Martin Pumera. So-Called "Metal-Free" Oxygen Reduction at Graphene Nanoribbons is in fact Metal Driven. *ChemCatChem.* 7, 1650 – 1654, **2015**. DOI10.1002/cctc.201500262. IF:5.501 (JCR 2021); 2nd Decile 63/165 (Chemistry, Physics); Citations: 20 (WS).

16. Xi Li; Jing Mu; Fang Liu; Eddy Wei Ping Tan; **Bahareh Khezri**; Richard D. Webster; Edwin Kok Lee Yeow; Bengang Xing. Human Transport Protein Carrier for Controlled Photoactivation of Antitumor Prodrug and Real-Time Intracellular Tumor Imaging. *Bioconjugate Chemistry* 26, 5, 955 – 961, **2015**. DOI: 10.1021/ACS.BIOCONJCHEM.5B00170. IF:6.069 (JCR 2021); 1st Decile 63/165 (Biochemical Research Methods); 1st Decile 75/322 (Biochemistry & Molecular Biology); 1st Decile 51/224 (Chemistry, Multidisciplinary); 1st Decile 12/63 (Chemistry, Physics); Citations: 41 (WS).

15. Gwendeline K. S. Wong; Li Zhen Lim; Marcus Jun Wen Lim; Li Lin Ong; **Bahareh Khezri**; Martin Pumera; Richard D. Webster. Evaluation of the Sorbent Properties of Single- and Multiwalled Carbon Nanotubes for Volatile Organic Compounds through Thermal Desorption–Gas Chromatography/Mass Spectrometry. *ChemPlusChem* 80, 1279 – 1287, **2015**. DOI: 10.1002/CPLU.201500070. IF:3.210 (JCR 2021); 3rd Decile 94/179 (Chemistry, Multidisciplinary); Citations: 13 (WS).

2014

14. James Guo Sheng Moo; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Graphene Oxides Prepared by Hummers', Hofmann's, and Staudenmaier's Methods: Dramatic Influences on Heavy-Metal-Ion Adsorption. *ChemPhysChem* 15, 14, 2922 – 2929, **2014**. DOI: 10.1002/CPHC.201402279. IF:3.520 (JCR 2021); 3rd Decile 92/165 (Chemistry, Physics); 2nd Decile 11/36 (Physics, Atomic, Molecular & Chemical); Citations: 13 (WS). (Citation: 58)

13. Jiating He; Weijie Ji; Lin Yao; Yawen Wang; **Bahareh Khezri**; Richard D. Webster; Hongyu Chen. Strategy for Nano-Catalysis in a Fixed-Bed System. *Advanced Materials*. 26, 4151 – 4155, **2014**. DOI: 10.1002/ADMA.201306157. IF:32.086 (JCR 2021); 1st Decile 5/179 (Chemistry, Multidisciplinary); 1st Decile 4/165 (Chemistry, Physics); 1st Decile 8/345 (Material Science, Multidisciplinary); 1st Decile 3/109 (Nanoscience & Nanotechnology); Citations: 88 (WS).

12. Shu Min Tan; Adriano Ambrosi; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Towards electrochemical purification of chemically reduced graphene oxide from redox accessible impurities. *Physical Chemistry Chemical Physics* 16, 15, 7058 – 7065, **2014**. DOI: 10.1039/C4CP00371C. IF:3.945 (JCR 2021); 1st Decile 9/36 (Physics, Atomic, Molecular & Chemical); 2nd Decile 81/165 (Chemistry, Physical); Citations: 13 (WS).

2013

11. Guanjia Zhao; **Bahareh Khezri**; Samuel Sanchez; Oliver G. Schmidt; Richard D. Webster; Martin Pumera. Corrosion of self-propelled catalytic microengines. *Chemical Communication* 49, 80, 9125 – 9127, **2013**. DOI: 10.1039/C3CC44998J. IF:6.065 (JCR 2021); 2nd Decile 53/179 (Chemistry, Multidisciplinary); Citations: 13 (WS).

10. Bahareh Khezri; Huan Mo; Zhen Yan; Shey-Ling Chong; Aik Kian Heng; Richard D. Webster. Simultaneous online monitoring of inorganic compounds in aerosols and gases in an industrialized area. *Atmospheric Environment* 80, 352 – 360, **2013**. DOI: 10.1016/J.ATMOSENV.2013.08.008. IF: 5.755 (JCR 2021); 2nd Decile 76/279 (Wnvironmental Science); 1st Decile 19/94 (Meteorology and Atmospheric Science) Citations: 25 (WS).

9. Guanjia Zhao; Hong Wang; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Influence of real-world environments on the motion of catalytic bubble-propelled micromotors. *Lab on a Chip* 13, 15, 2937 – 2941, **2013**. DOI: 10.1039/C3LC50446H. IF:7.517 (JCR 2021); 1st Decile 10/99 (Chemistry, Analytical); 1st Decile 7/84 (Biochemical Research Methods); 1st Decile 31/224 (Chemistry, Multidisciplinary); 1st Decile 25/138 (Nanoscience & Nanotechnology); Citations: 37 (WS).

8. Colin Hong An Wong; Chun Kiang Chua; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Graphene Oxide Nanoribbons from the Oxidative Opening of Carbon Nanotubes Retain Electrochemically Active Metallic Impurities. *Angewandte Chemie International Edition* 52, 33, 8685 – 8688, **2013**. DOI: 10.1002/ANIE.201303837. IF:19.924 (JCR 2021); 1st Decile 15/179 (Chemistry, Multidisciplinary); Citations: 50 (WS).

2012

7. Adriano Ambrosi; Chun Kiang Chua Chua; Bahareh Khezri; Zdeněk Sofer Sofer; Richard D. Webster. Chemically reduced graphene contains inherent metallic impurities present in parent natural and synthetic graphite. *Proceedings of the National Academy of Sciences of the United States (PNAS)*. 109, 32, 12899 – 12904, **2012**. DOI: 10.1073/PNAS.1205388109. IF:12.779 (JCR 2021); 1st Decile 9/74 (Multidisciplinary Sciences); Citations: 173 (WS).

6. Marcella Giovanni; Hwee Ling Poh; Adriano Ambrosi; Guanjia Zhao; Zdeněk Sofer; Filip Šaněk; **Bahareh Khezri**; Richard D. Webster; Martin Pumera. Noble metal (Pd, Ru, Rh, Pt, Au, Ag) doped graphene hybrids for electrocatalysis. *Nanoscale*. 4, 16, 5002 – 5008, **2012**. DOI: 10.1039/C2NR31077E. IF:8.307 (JCR 2021); 1st Decile 37/179 (Chemistry, Multidisciplinary); 1st Decile 70/345 (Material Science, Multidisciplinary); 2nd Decile 81/165 (Nanoscience & Nanotechnology); 1st Decile 81/165 (Physics, Applied); Citations: 195 (WS).

5. **Bahareh Khezri**; Richard D. Webster. Chemical Analysis of $PM_{2.5}$ during Dry Deforestation Season in Southeast Asia. *International Journal of Environmental and Ecological Engineering* 6, 4, 173 - 183, **2012**. DOI: doi.org/10.5281/zenodo.1057771. Proceeding, Citation: 4.

2011

4. Adriano Ambrosi; Sze Yin Chee; **Bahareh Khezri**; Richard D. Webster; Zdeněk Sofer; Martin Pumera. Metallic Impurities in Graphenes Prepared from Graphite Can Dramatically Influence Their Properties. *Angewandte Chemie International Edition* 51, 2, 500 – 503, **2011**. DOI: 10.1002/ANIE.201106917. IF:19.924 (JCR 2021); 1st Decile 15/179 (Chemistry, Multidisciplinary); Citations: 150 (WS).

3. Huanping Yang; Jian Jiang; Weiwei Zhou; Linfei Lai; Lifei Xi; Yeng Ming Lam; Zexiang Shen; **Bahareh Khezri**; Ting Yu. Influences of graphene oxide support on the electrochemical performances of graphene oxide-MnO_2 nanocomposites. *Nanoscale Research Letters*. 6, 531, **2011**. DOI: 10.1186/1556-276X-6-531. IF:5.418 (JCR 2021); 1st Decile 38/161 (Physics, Applied); 2nd Decile 115/345 (Material Science, Multidisciplinary); 3rd Decile 56/109 (Nanoscience & Nanotechnology); Citations: 99 (WS).

2008

2. Mohammad K. Amini; **Bahareh Khezri**; Alireza Firooz. Development of a highly sensitive and selective optical chemical sensor for batch and flow-through determination of mercury ion. Sensors and Actuators B: Chemical. 131, 2, 470 – 478, **2008**. DOI: 10.1016/J.SNB.2007.12.008. IF:9.221 (JCR 2021); 1st Decile 6/87 (Chemistry, Analytical); 1st Decile 5/30 (Electrochemistry); Citations: 46 (WS).

1. **Bahareh Khezri**; Mohammad K. Amini; Alireza Firooz. An optical chemical sensor for mercury ion based on 2-mercaptopyrimidine in PVC membrane. *Analytical and Bioanalytical Chemistry* 390, 1943 – 1950, **2008**. DOI: 10.1007/S00216-008-1906-2. IF:4.478 (JCR 2021); 2nd Decile 25/79 (Biomedical Research Methods); 2nd Decile 22/87 (Chemistry, Analytical); Citations: 25 (WS).

COVERS

HIGHLIGHTS (last 5 years)

Targeting Gastrointestinal Disease with Nanorobots at AZONano: A nice summary about our review "Nano/Microrobots Line Up for Gastrointestinal Tract Diseases: Targeted Delivery, Therapy, and Prevention" by Marzia Khan (2022).

A 3D-printed autonomous robot is made from graphene and powered by a reaction between aluminum and water: a highlight abour our paper "Smartdust 3D-Printed Graphene-Based Al/Ga Robots for Photocatalytic Degradation of Explosives" in Advanced Science News (2021).

News&Views at Nature Machine Intelligent on our "Chemically programmable microrobots weaving a web from hormones" research paper by Dongdong Jin & Li Zhang (2020).

A report on "on our "Chemically programmable microrobots weaving a web from hormones" paper" by TechXplore

Our review "CO_2 reduction: the quest for electrocatalytic materials" published in Journal of Material Chemistry A, has received "the most viewed article" and it is part of the themed collection: Recent Review Articles.

FUNDINGS AND PROJECTS

Funding Agency	Period	Ref. No.	Amount
Ministry of Science and Innovation, Spain	2022-2027 (PI)	RYC2020-029990-I	~220,000 €
General Directorate for Research in the Government of Catalonia and managed by AGAUR, Spain	2021-2024	BP00220 "POM-Assisted 2D materials for photo/electrochemical CO_2 reduction"	~ 150,000 €
Czech Science Foundation (GACR), Czech Republic	2020-2022 (PI)	20-20201S "Layered material-based nano/micromotors: Towards Biomedical and Environmental Applications"	400,000 €
A*STAR Science and Engineering Research Council (SERC), Singapore	2013-2014 (PI)	111202006 "Electroanalysis"	250,000 €
Agency for Science, Technology and Research (A*STAR)	2008-2012	2008510559	200,000 €
		Total	**1,250,000**