



## Publication list Department of Chemical Engineering

### 2021

1. Shahid, Salman; Baron, Gino V., Denayer, Joeri F. M.; Martens, Johan A.; Wee, Lik H.; Vankelecom, Ivo F. J. (2021). Hierarchical ZIF-8 composite membranes: Enhancing gas separation performance by exploiting molecular dynamics in hierarchical hybrid materials. *Journal of Membrane Science*, 620, 118943, DOI: 10.1016/j.memsci.2020.118943.
2. Broeckhoven, Ken; Desmet, Gert (2021). Methods to determine the kinetic performance limit of contemporary chromatographic techniques. *Journal of Separation Science*, 44, 323-339, DOI: 10.1002/jssc.202000779.
3. Pepermans, Vincent; M. T. Rerick, Degreef, Bart; Eeltink, Sebastiaan; G. Weber; Desmet, Gert (2021). Column-in-valve designs to minimize extra-column volumes. *Journal of Chromatography A*, 1637, 461779, DOI: 10.1016/j.chroma.2020.461779.
4. Broeckhoven, Ken; Desmet, Gert (2021). Advances and Innovations in Liquid Chromatography Stationary Phase Supports. *Analytical Chemistry*, 93/1, 257-272, DOI: 10.1021/acs.analchem.0c04466.
5. Cabooter, Deirdre; Song, Huiying; Makey, Devin; Sadriaj, Donatela; Dittmann, Monika; Stoll, Dwight; Desmet, Gert (2021). Measurement and modelling of the intra-particle diffusion and b-term in reversed-phase liquid chromatography. *Journal of Chromatography A*, 1637, 461852, DOI: 10.1016/j.chroma.2020.461852.
6. Kensert, Alexander; Collaerts, Gilles; Efthymiadis, Kyriakos; Desmet, Gert; Cabooter, Deirdre (2021). Deep Q-learning for the selection of optimal isocratic scouting runs in liquid chromatography. *Journal of Chromatography A*, 1638, 461900, DOI: 10.1016/j.chroma.2021.461900.
7. Themelis, Thomas; Amini, Ali; De Vos, Jelle; Eeltink, Sebastiaan (2021). Towards spatial comprehensive three-dimensional liquid chromatography: A tutorial review. *Analytica Chimica Acta*, 1148, 238157, DOI: 10.1016/j.aca.2020.12.032.
8. Hou, Zhanyao; Broeckhoven, Ken; Desmet, Gert; Lynen, Frederic (2021). Through-pore polymerization in polar high-performance liquid chromatography columns allowing scanning electron microscopy based imaging of the packing order. *Journal of Chromatography A*, 1638, 461851, DOI: 10.1016/j.chroma.2020.461851.
9. Gunnarson, Caden; Lauer, Thomas; Willenbring, Harrison; Larson, Eli; Dittmann, Monika; Broeckhoven, Ken; Stoll, Dwight R. (2021). Implications of dispersion in connecting capillaries for separation systems involving post-column flow splitting. *Journal of Chromatography A*, 1639, 461893, DOI: 10.1016/j.chroma.2021.461893.



10. Nováková, Lucie; Eeltink, Sebastiaan (2021). Editorial: Advances in supercritical fluid chromatography. *Analytical Science Advances*, 2, 1, DOI: 10.1002/ansa.202000163.
11. Eeltink, Sebastiaan; Meston, Daniel; Svec, Frantisek (2021). Recent developments and applications of polymer monolithic stationary phases. *Analytical Science Advances*, 2/3-4, 250-260, DOI: 10.1002/ansa.202100006.
12. De Vos, Jelle; Stoll, Dwight; Buckenmaier, Stephan; Eeltink, Sebastiaan; Grinias, James (2021). Advances in ultra-high-pressure and multi-dimensional liquid chromatography instrumentation and workflows. *Analytical Science Advances*, 2/3-4, 171-192, DOI: 10.1002/ansa.202100007.
13. Esmaeili, Faezeh; Hojjat, Mohammad; Denayer, Joeri F. M.; Gholami, Mohsen (2021). CO<sub>2</sub> Capture on an Adsorbent-Coated Finned Tube Heat Exchanger: Effect of the Adsorbent Thickness. *Industrial & Engineering Chemistry Research*, 60/12, 4677-4681, DOI: 10.1021/acs.iecr.0c06171.
14. Van Assche, Tom R. C.; Baron, Gino, V.; Denayer, Joeri F. M. (2021). Adsorption Size Effects for Langmuir Systems in Process Simulators: Case Study Comparing Explicit Langmuir-Based Models and FASTIAS. *Industrial & Engineering Chemistry Research*, 60/32, 12092-12099, DOI: 10.1021/acs.iecr.1c01657.
15. Stoll, Dwight R.; Broeckhoven, Ken (2021). Where Has My Efficiency Gone? Impacts of Extracolumn Peak Broadening on Performance, Part I: Basic Concepts. *LC GC Europe*, 34/5, 181-188.
16. Stoll, Dwight R.; Broeckhoven, Ken (2021). Where Has My Efficiency Gone? Impacts of Extracolumn Peak Broadening on Performance, Part I: Basic Concepts. *LC GC North America*, 39/4, 159-166.
17. Stoll, Dwight R.; Broeckhoven, Ken (2021). Where has my efficiency gone? Impacts of extracolumn peak broadening on performance, part II: Sample injection. *LC GC North America*, 39/5, 208-212.
18. Stoll, Dwight R.; Broeckhoven, Ken (2021). Where has my efficiency gone? Impacts of extracolumn peak broadening on performance, part iii: Tubing and detectors. *LC GC North America*, 39/6, 252-257.
19. Stoll, Dwight R.; Broeckhoven, Ken (2021). Where Has My Efficiency Gone? Impacts of Extracolumn Peak Broadening on Performance, Part IV: Gradient Elution, Flow Splitting, and a Holistic View. *LC GC North America*, 39/7, 308-314.
20. Nguyen, Vy Thi Hoang; Jensen, Flemming; Hubner, Joerg; Shkondin, Evgeniy; Cork, Roy; Ma, Kechun; Leussink, Pele; De Malsche, Wim; Jansen, Henri (2021). Cr and CrO<sub>x</sub> etching using SF<sub>6</sub> and O-2 plasma. *Journal of Vacuum Science & Technology B*, 39/3, 32201.
21. Pepermans, Vincent; Chapel, Soraya; Heinisch, Sabine; Desmet, Gert (2021). Detailed numerical study of the peak shapes of neutral analytes injected at high solvent strength in



- short reversed-phase liquid chromatography columns and comparison with experimental observations. *Journal of Chromatography A*, 1643, 462078, DOI: 10.1016/j.chroma.2021.462078.
22. Jimidar, Ignaas S. M.; Sotthewes, Kai; Gardeniers, Han; Desmet, Gert (2021). A detailed study of the interaction between levitated microspheres and the target electrode in a strong electric field. *Powder Technology*, 383, 292-301, DOI: 10.1016/j.powtec.2021.01.036.
  23. Claessens, Benjamin; Wittevrongel, Gille R.; Rey, Fernando; Valencia, Susana; Cousin-Saint-Remi, Julien; Baron, Gino V.; Denayer, Joeri F. M. (2021). Capturing renewable isobutanol from model vapor mixtures using an all-silica beta zeolite. *Chemical Engineering Journal*, 412, 128658, DOI: 10.1016/j.cej.2021.128658.
  24. Wouters, Sam; Eeltink, Sebastiaan; Haselberg, Rob; Somsen, Govert W.; Gargano, Andrea F. G. (2021). Microfluidic ion stripper for removal of trifluoroacetic acid from mobile phases used in HILIC-MS of intact proteins. *Analytical and Bioanalytical Chemistry*, 413/17, 4379-4386, DOI: 10.1007/s00216-021-03414-4.
  25. Assen, Ayalew H.; Viridis, Thomas; De Moor, Wannes; Moussa, Ali; Eddaoudi, Mohamed; Baron, Gino; Denayer, Joeri F. M.; Belmabkhout, Youssef (2021). Kinetic separation of C4 olefins using Y-fum-fcu-MOF with ultra-fine-tuned aperture size. *Chemical Engineering Journal*, 413, 127388, DOI: 10.1016/j.cej.2020.127388.
  26. Kensert, Alexander; Collaerts, Gilles; Efthymiadis, Kyriakos; Van Broeck, Peter; Desmet, Gert; Cabooter, Deirdre (2021). Deep convolutional autoencoder for the simultaneous removal of baseline noise and baseline drift in chromatograms. *Journal of Chromatography A*, 1646, 462093, DOI: 10.1016/j.chroma.2021.462093.
  27. Tiflidis, Christina; Westerbeek, Eiko Y.; Jorissen, Koen F. A.; Olthuis, Wouter; Eijkel, Jan C. T.; De Malsche, Wim (2021). Inducing AC-electroosmotic flow using electric field manipulation with insulators. *Lab on a Chip*, 21/16, 3105-3111, DOI: 10.1039/d1lc00393c.
  28. De Vos, Jelle; Eeltink, Sebastiaan (2021). Editorial to Multidimensional and Hyphenated Techniques in Separation Science. *Chromatographia*, 84/9, 819-819, DOI: 10.1007/s10337-021-04067-2.
  29. Gelin, Pierre; Maes, Dominique; De Malsche, Wim (2021). Reducing Taylor-Aris dispersion by exploiting lateral convection associated with acoustic streaming. *Chemical Engineering Journal*, 417, 128031, DOI: 10.1016/j.cej.2020.128031.
  30. Hara, Takeshi; Baron, Gino V.; Hata, Kosuke; Izumi, Yoshihiro; Bamba, Takeshi; Desmet, Gert (2021). Performance of functionalized monolithic silica capillary columns with different mesopore sizes using radical polymerization of octadecyl methacrylate. *Journal of Chromatography A*, 1651, 462282, DOI: 10.1016/j.chroma.2021.462282.
  31. Ewonde, Raphael; De Vos, Jelle; Broeckhoven, Ken; Esser, Daniel; Eeltink, Sebastiaan (2021). Assessment of the resolving power of hydrophobic interaction chromatography for intact



protein analysis on non-porous butyl polymethacrylate phases. *Journal of Chromatography A*, 1651, 462310, DOI: 10.1016/j.chroma.2021.462310.

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33. Mebed, Abdelazim M.; De Malsche, Wim; Abd-Elnaiem, Alaa M. (2021). Fabrication, Boron Leaching, and Electrochemical Impedance Spectroscopy of Nanoporous P-Type Silicon. *Silicon*, , , DOI: 10.1007/s12633-021-01338-3.
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35. Sharma, Ravi; Segato, Tiriana; Delplancke, Marie-Paule; Terryn, Herman; Baron, Gino V.; Denayer, Joeri F. M.; Cousin-Saint-Remi, Julien (2020). Hydrogen chloride removal from hydrogen gas by adsorption on hydrated ion-exchanged zeolites. *Chemical Engineering Journal*, 381, , DOI: 10.1016/j.cej.2019.122512.
36. Broeckhoven, Ken; Desmet, Gert (2020). Advances and Challenges in Extremely High-Pressure Liquid Chromatography in Current and Future Analytical Scale Column Formats. *Analytical Chemistry*, 92/1, 554-560, DOI: 10.1021/acs.analchem.9b04278.
37. Zhu, Koudi; Pursch, Matthias; Eeltink, Sebastiaan; Desmet, Gert (2020). Maximizing two-dimensional liquid chromatography peak capacity for the separation of complex industrial samples. *Journal of Chromatography A*, 1609, 460457, DOI: 10.1016/j.chroma.2019.460457.
38. Fernandez-Pumarega, Alejandro; Dores-Sousa, Jose Luis; Eeltink, Sebastiaan (2020). A comprehensive investigation of the peak capacity for the reversed-phase gradient liquid-chromatographic analysis of intact proteins using a polymer-monolithic capillary column. *Journal of Chromatography A*, 1609, 460462, DOI: 10.1016/j.chroma.2019.460462.
39. De Vos, Jelle; Dams, Magali; Broeckhoven, Ken; Desmet, Gert; Horstkotte, Burkhard; Eeltink, Sebastiaan (2020). Prototyping of a Microfluidic Modulator Chip and Its Application in Heart-Cut Strong-Cation-Exchange-Reversed-Phase Liquid Chromatography Coupled to Nanoelectrospray Mass Spectrometry for Targeted Proteomics. *Analytical Chemistry*, 92/3, 2388-2392, DOI: 10.1021/acs.analchem.9b05141.
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41. Adamopoulou, Theodora; Deridder, Sander; Bos, Tijmen S.; Nawada, Suhas; Desmet, Gert; Schoenmakers, Peter J. (2020). Optimizing design and employing permeability differences to achieve flow confinement in devices for spatial multidimensional liquid chromatography. *Journal of Chromatography A*, 1612, 460665, DOI: 10.1016/j.chroma.2019.460665.
42. Stroobants, Sander; Callewaert, Manly; Krzek, Marzena; Chinnu, Sudha; Gelin, Pierre; Ziemecka, Iwona; Lutsko, James F.; De Malsche, Wim; Maes, Dominique (2020). Influence of Shear on Protein Crystallization under Constant Shear Conditions. *Crystal Growth & Design*, 20/3, 1876-1883, DOI: 10.1021/acs.cgd.9b01584.
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47. Deridder, Sander; Smits, Wim; Broeckhoven, Ken; Desmet, Gert (2020). A multiscale modelling study on the sense and nonsense of thermal conductivity enhancement of liquid chromatography packings and other potential solutions for viscous heating effects. *Journal of Chromatography A*, 1620, 461022, DOI: 10.1016/j.chroma.2020.461022.
48. Claessens, Benjamin; Dubois, Nicolas; Lefevre, Jasper; Mullens, Steven; Cousin-Saint-Remi, Julien; Denayer, Joeri F. M. (2020). 3D-Printed ZIF-8 Monoliths for Biobutanol Recovery. *Industrial & Engineering Chemistry Research*, 59/18, 8813-8824, DOI: 10.1021/acs.iecr.0c00453.
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