Dr. Vitaliy L. Budarin

GENERAL

Department of Chemistry, University of York
Date of appointment to the University of York – 01/10/2002

Present position	Principal Scientist and leader of the Microwave technology platform. Green Chemistry Centre of Excellence (GCCE). The University of York. Head: Professor James Clark.
Qualifications	
	Taras Shevchenko University, Kiev
Programme:	PhD Chemistry
Thesis Overview:	Carbonyl clusters compounds as catalysts of the homogeneous red-ox reaction. Supervisor: Prof. Yatsemirskiy V.K.
	Department of Physical chemistry, Taras Shevchenko University, Kiev
Programme:	MSc Chemistry
Brief:	Fundamentals of surface chemistry, and its applications to heterogeneous catalysis and thin film protection. Project: Influence of active centre structure of Fe-Co catalysts on its catalytic activity in the ammonia production reaction.
	Department of Physical chemistry, Taras Shevchenko University, Kiev
Programme:	BSc Chemistry
Brief:	Fundamental courses in Chemistry, Mathematics, Physics, Statistic and Philosophy of science.

RESEARCH AND SCHOLARSHIP

Publications, compositions, patents, exhibitions and commissions

145 publications in peer-reviewed journals and conference proceedings including 8 publications in international journals with an impact index higher than 10: J. Am. Chem. Soc. -1; Angewandte Chemie-3; Energy & Environmental Science-1; Chemical Society Reviews-2 and Advanced Functional Materials-1.

h-index =35; Sum of the Papers Times Cited > 5100

5 book chapters and 6 patents.

(i) Books and Reports

1. >Carbon Trust Pyrolysis Challenge Grants Final Report: Lead Author: Dr. Vitaliy Budarin; Co-Authors: A. Fan, Dr. D.J. Macquarrie. Dr. M.J. Gronnow, J. Parker, Dr. P.S. Shuttleworth, Dr. S.W. Breeden, Prof. J.H. Clark; 31st August 2011.

(ii) Chapters in books

1. =Budarin,V., Gronnow, M., Shuttleworth, P. and Clark, J., "Microwave assisted pyrolysis biorefineries" in Rafael Luque and Juan Carlos Colmenares (ed.) Future Science e-book series: An introduction to green chemistry methods, Chapter 5, 2013

2. =Shuttleworth, P., Budarin,V., and Gronnow, M., "Microwave introduction to biomass pyrolysis", in Abbas Kazmi and Peter Shuttleworth (ed.) RSC Green Chemistry Series: Economic Utilisation of Food Co-Products, ISBN: 9781849736152, 2013
3. =Clark, J., Macquarrie, D., Gronnow, M. and Budarin,V., " Green Chemistry Principles", in Boodhoo, K. and Harvey, A. (ed.) Process Intensification for Green Chemistry: Engineering Solutions for Sustainable Chemical Processing, London: John Wiley, 33-58, 2013.
4. >Budarin, V., Shuttleworth, P.S., Lanigan, B. and Clark, J.H., "Nano-Catalysts for Biofuels", in Polshettiwar, V. and Asefa, T. (es) Nanocatalysis. Synthesis and Applications, USA: John Wiley & Sons Inc, 2013, Pages: 736.
5. =Perez-Caballero, F., Peikolainen, A.-L., Koel, M., White, R. J., Budarin, V. and Clark, J. H., "Progress in Porous Media Research" , in Tian, K.S. and Shu, H.J. (ed.) Organic Aerogels As Precursors For The Preparation Of Porous Carbons, USA: Nova Science Publishers, 419-459, 2009.

(iii) Articles in journals

(1) Lorente, A.; Remón, J.; Budarin, V. L.; Sánchez-Verdú, P.; Moreno, A.; Clark, J. H. Analysis and Optimisation of a Novel "Bio-Brewery" Approach: Production of Bio-Fuels and Bio-Chemicals by Microwave-Assisted, Hydrothermal Liquefaction of Brewers' Spent Grains. Energy Conversion and Management 2019, 185, 410–430. https://doi.org/10.1016/j.enconman.2019.01.111.

(2) Abeln, F.; Fan, J.; Budarin, V. L.; Briers, H.; Parsons, S.; Allen, M. J.; Henk, D. A.; Clark, J.; Chuck, C. J. Lipid Production through the Single-Step Microwave Hydrolysis of Macroalgae Using the Oleaginous Yeast Metschnikowia Pulcherrima. Algal Research 2019, 38. https://doi.org/10.1016/j.algal.2019.101411.

(3) Lokesh, K.; West, C.; Kuylenstierna, J. C.; Fan, J.; Budarin, V.; Priecel, P.; Lopez-Sanchez, J. A.; Clark, J. H. Economic and Agronomic Impact Assessment of Wheat Straw Based Alkyl Polyglucoside Produced Using Green Chemical Approaches. Journal of Cleaner Production 2019, 209, 283–296. https://doi.org/10.1016/j.jclepro.2018.10.220.

(4) Bouxin, F. P.; Clark, J. H.; Fan, J.; Budarin, V. Combining Steam Distillation with Microwave-Assisted Pyrolysis to Maximise Direct Production of Levoglucosenone from Agricultural Wastes. Green Chemistry 2019, 21 (6), 1282–1291. https://doi.org/10.1039/c8gc02994f.

(5) Remón, J.; Randall, J.; Budarin, V. L.; Clark, J. H. Production of Bio-Fuels and Chemicals by Microwave-Assisted, Catalytic, Hydrothermal Liquefaction (MAC-HTL) of a Mixture of Pine and Spruce Biomass. Green Chemistry 2019, 21 (2), 284–299. https://doi.org/10.1039/c8gc03244k.

(6) Jiang, Z.; Remón, J.; Li, T.; Budarin, V. L.; Fan, J.; Hu, C.; Clark, J. H. A One-Pot Microwave-Assisted NaCl–H 2 O/GVL Solvent System for Cellulose Conversion to 5-Hydroxymethylfurfural and Saccharides with in Situ Separation of the Products. Cellulose 2019. https://doi.org/10.1007/s10570-019-02362-8.

(7) Doroshenko, A.; Budarin, V.; McElroy, R.; Hunt, A. J.; Rylott, E.; Anderson, C.; Waterland, M.; Clark, J. Using: In Vivo Nickel to Direct the Pyrolysis of Hyperaccumulator Plant Biomass. Green Chemistry 2019, 21 (6), 1236–1240. https://doi.org/10.1039/c8gc03015d.

(8) Fan, J.; Santomauro, F.; Budarin, V. L.; Whiffin, F.; Abeln, F.; Chantasuban, T.; Gore-Lloyd, D.; Henk, D.; Scott, R. J.; Clark, J.; et al. The Additive Free Microwave Hydrolysis of Lignocellulosic Biomass for Fermentation to High Value Products. Journal of Cleaner Production 2018, 198, 776–784. https://doi.org/10.1016/j.jclepro.2018.07.088.

(9) Luo, Y.; Fan, J.; Budarin, V. L.; Hu, C.; Clark, J. H.; Matharu, A.; Melo, E. M. D. Toward a Zero-Waste Biorefinery: Confocal Microscopy as a Tool for the Analysis of Lignocellulosic Biomass. ACS Sustainable Chemistry and Engineering 2018, 6 (10), 13185–13191. https://doi.org/10.1021/acssuschemeng.8b02769.

(10) Attard, T. M.; Bukhanko, N.; Eriksson, D.; Arshadi, M.; Geladi, P.; Bergsten, U.; Budarin, V. L.; Clark, J. H.; Hunt, A. J. Supercritical Extraction of Waxes and Lipids from Biomass: A Valuable First Step towards an Integrated Biorefinery. Journal of Cleaner Production 2018, 177, 684–698. https://doi.org/10.1016/j.jclepro.2017.12.155.

(11) Fan, J.; Shuttleworth, P. S.; Gronnow, M.; Breeden, S. W.; Clark, J. H.; Macquarrie, D. J.; Budarin, V. L. Influence of Density on Microwave Pyrolysis of Cellulose. ACS Sustainable Chemistry and Engineering 2018, 6 (3), 2916–2920. https://doi.org/10.1021/acssuschemeng.8b00280.
(12) Jiang, Z.; Budarin, V. L.; Fan, J.; Remón, J.; Li, T.; Hu, C.; Clark, J. H. Sodium Chloride-Assisted Depolymerization of Xylo-Oligomers to Xylose. ACS Sustainable Chemistry and Engineering 2018, 6 (3), 4098–4104. https://doi.org/10.1021/acssuschemeng.7b04463.
(13) Zhou, L.; Lie, Y.; Briers, H.; Fan, J.; Remón, J.; Nyström, J.; Budarin, V.; Macquarrie, D.; McElroy, C. R. Natural Product Recovery from Bilberry (Vaccinium Myrtillus L.) Presscake via Microwave Hydrolysis. ACS Sustainable Chemistry and Engineering 2018, 6 (3), 3676–3685. https://doi.org/10.1021/acssuschemeng.7b03999.
(14) Dávila, I.; Gullón, P.; Labidi, J.; Budarin, V. Assessment of the Influence of the Temperature in the Microwave-Assisted Alkaline Delignification of Vine Shoots. Chemical Engineering Transactions 2018, 70, 1687–1692. https://doi.org/10.3303/CET1870282.
(15) Remón, J.; Zhu, G.; Budarin, V. L.; Clark, J. H. Analysis and Optimisation of a Microwave-Assisted Hydrothermal Process for the Production of Value-Added Chemicals from Glycerol. Green Chemistry 2018, 20 (11), 2624–2636. https://doi.org/10.1039/c8gc01079j.
(16) Attard, J.; Milescu, R.; Budarin, V.; Matharu, A. S.; Clark, J. H. Unexpected Nitrile Formation in Bio-Based Mesoporous Materials (Starbons®). Chemical Communications 2018, 54 (6), 686–688. https://doi.org/10.1039/c7cc09586d.
(17) Li, T.; Remón, J.; Jiang, Z.; Budarin, V. L.; Clark, J. H. Towards the Development of a Novel "Bamboo-Refinery" Concept: Selective Bamboo Fractionation by Means of a Microwave-Assisted, Acid-Catalysed, Organosolv Process. Energy Conversion and Management 2018, 155, 147–160. https://doi.org/10.1016/j.enconman.2017.10.077.
(18) García, A. M.; Budarin, V. L.; Zhou, Y.; De Bruyn, M.; Hunt, A. J.; Lari, L.; Lazarov, V. K.; Salavagione, H. J.; Morales, E.; Ellis, G. J.; et al. Monolithic Mesoporous Graphitic Composites as Super Capacitors: From Starbons to Starenes®. Journal of Materials Chemistry A 2018, 6 (3), 1119–1127. https://doi.org/10.1039/c7ta09338a.
(19) Zhou, L.; Budarin, V.; Fan, J.; Sloan, R.; Macquarrie, D. Efficient Method of Lignin Isolation Using Microwave-Assisted Acidolysis and Characterization of the Residual Lignin https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.6b02545 (accessed Apr 1, 2019). https://doi.org/10.1021/acssuschemeng.6b02545.
(20) De Bruyn, M.; Budarin, V. L.; Sturm, G. S. J.; Stefanidis, G. D.; Radoiu, M.; Stankiewicz, A.; Macquarrie, D. J. Subtle Microwave-Induced Overheating Effects in an Industrial Demethylation Reaction and Their Direct Use in the Development of an Innovative Microwave Reactor. Journal of the American Chemical Society 2017, 139 (15), 5431–5436. https://doi.org/10.1021/jacs.7b00689.
(21) Luo, Y.; Fan, J.; Budarin, V. L.; Hu, C.; Clark, J. H. Microwave-Assisted Hydrothermal Selective Dissolution and Utilisation of Hemicellulose in Phyllostachys Heterocycla Cv. Pubescens. Green Chemistry 2017, 19 (20), 4889–4899. https://doi.org/10.1039/c7gc02300f.
(22) Salavagione, H. J.; Sherwood, J.; Bruyn, M. D.; Budarin, V. L.; Ellis, G. J.; Clark, J. H.; Shuttleworth, P. S. Identification of High Performance Solvents for the Sustainable Processing of Graphene. Green Chem. 2017, 19 (11), 2550–2560. https://doi.org/10.1039/C7GC00112F.
(23) Li, T.; Remón, J.; Shuttleworth, P. S.; Jiang, Z.; Fan, J.; Clark, J. H.; Budarin, V. L. Controllable Production of Liquid and Solid Biofuels by Doping-Free, Microwave-Assisted, Pressurised Pyrolysis of Hemicellulose. Energy Conversion and Management 2017, 144, 104–113. https://doi.org/10.1016/j.enconman.2017.04.055.
(24) Lokesh, K.; West, C.; Kuylenstierna, J.; Fan, J.; Budarin, V.; Priecel, P.; Lopez-Sanchez, J. A.; Clark, J. Environmental Impact Assessment of Wheat Straw Based Alkyl Polyglucosides Produced Using Novel Chemical Approaches. Green Chem. 2017, 19 (18), 4380–4395. https://doi.org/10.1039/C7GC01719G.
(25) Bustamante, J.; van Stempvoort, S.; García-Gallarreta, M.; Houghton, J. A.; Briers, H. K.; Budarin, V. L.; Matharu, A. S.; Clark, J. H. Microwave Assisted Hydro-Distillation of Essential Oils from Wet Citrus Peel Waste. Journal of Cleaner Production 2016, 137, 598–605. https://doi.org/10.1016/j.jclepro.2016.07.108.

(26) Edo, M.; Budarin, V.; Aracil, I.; Persson, P.-E.; Jansson, S. The Combined Effect of Plastics and Food Waste Accelerates the Thermal Decomposition of Refuse-Derived Fuels and Fuel Blends. Fuel 2016, 180, 424–432. https://doi.org/10.1016/j.fuel.2016.04.062.
(27) De bruyn, M.; Fan, J.; Budarin, V. L.; Macquarrie, D. J.; Gomez, L. D.; Simister, R.; Farmer, T. J.; Raverty, W. D.; McQueen-Mason, S. J.; Clark, J. H. A New Perspective in Bio-Refining: Levoglucosenone and Cleaner Lignin from Waste Biorefinery Hydrolysis Lignin by Selective Conversion of Residual Saccharides. Energy & Environmental Science 2016, 9 (8), 2571–2574. https://doi.org/10.1039/C6EE01352J.
(28) Gao, Q.; Cieplik, M. K.; Budarin, V. L.; Gronnow, M.; Jansson, S. Mechanistic Evaluation of Polychlorinated Dibenzo-p-Dioxin, Dibenzofuran and Naphthalene Isomer Fingerprints in Microwave Pyrolysis of Biomass. Chemosphere 2016, 150, 168–175. https://doi.org/10.1016/j.chemosphere.2016.02.031.
(29) White, R. J.; Shuttleworth, P. S.; Budarin, V. L.; Bruyn, M. D.; Fischer, A.; Clark, J. H. An Interesting Class of Porous Polymer - Revisiting the Structure of Mesoporous α- D -Polysaccharide Gels. ChemSusChem 2016, 9 (3), 280–288.
(30) Gao, Q.; Budarin, V. L.; Cieplik, M.; Gronnow, M.; Jansson, S. PCDDs, PCDFs and PCNs in Products of Microwave-Assisted Pyrolysis of Woody Biomass--Distribution among Solid, Liquid and Gaseous Phases and Effects of Material Composition. Chemosphere 2016, 145, 193–199. https://doi.org/10.1016/j.chemosphere.2015.11.110.
(31) Fan, J.; Budarin, V.; Gronnow, M. J.; Clark, J. H. Low-Temperature Microwave Pyrolysis and Large Scale Microwave Applications. RSC Green Chemistry 2016, 2016-January (47), 64–92. https://doi.org/10.1039/9781782623632-00064.
(32) Durá, G.; Budarin, V. L.; Castro-Osma, J. A.; Shuttleworth, P. S.; Quek, S. C. Z.; Clark, J. H.; North, M. Importance of Micropore–Mesopore Interfaces in Carbon Dioxide Capture by Carbon-Based Materials. Angewandte Chemie - International Edition 2016, 55 (32), 9173–9177. https://doi.org/10.1002/anie.201602226.
(33) Attard, T. M.; Arshadi, M.; Nilsson, C.; Budarin, V. L.; Valencia-Reyes, E.; Clark, J. H.; Hunt, A. J. Impact of Supercritical Extraction on Solid Fuel Wood Pellet Properties and Off-Gassing during Storage. Green Chemistry 2016, 18 (9), 2682–2690. https://doi.org/10.1039/c5gc02479j.
(34) Budarin, V. L.; Clark, J. H.; Henschen, J.; Farmer, T. J.; Macquarrie, D. J.; Mascal, M.; Nagaraja, G. K.; Petchey, T. H. M. Processed Lignin as a Byproduct of the Generation of 5-(Chloromethyl)Furfural from Biomass: A Promising New Mesoporous Material. ChemSusChem 2015, 8 (24), 4172–4179. https://doi.org/10.1002/cssc.201501319.
(35) Wu, C.; Budarin, V. L.; Wang, M.; Sharifi, V.; Gronnow, M. J.; Wu, Y.; Swithenbank, J.; Clark, J. H.; Williams, P. T. CO2 Gasification of Bio-Char Derived from Conventional and Microwave Pyrolysis. Applied Energy 2015, 157, 533–539. https://doi.org/10.1016/j.apenergy.2015.04.075.
(36) Jiang, T.; Budarin, V. L.; Shuttleworth, P. S.; Ellis, G.; Parlett, C. M. A.; Wilson, K.; Macquarrie, D. J.; Hunt, A. J. Green Preparation of Tuneable Carbon-Silica Composite Materials from Wastes. Journal of Materials Chemistry A 2015, 3 (27), 14148–14156. https://doi.org/10.1039/c5ta02494c.
(37) Mesquita, L. M. M.; Pinto, R. M. A.; Salvador, J. A. R.; Clark, J. H.; Budarin, V. L. Starbon®400-HSO3: A Green Mesoporous Carbonaceous Solid Acid Catalyst for the Ritter Reaction. Catalysis Communications 2015, 69, 170–173. https://doi.org/10.1016/j.catcom.2015.06.010.
(38) Parker, H. L.; Dodson, J. R.; Budarin, V. L.; Clark, J. H.; Hunt, A. J. Direct Synthesis of Pd Nanoparticles on Alginic Acid and Seaweed Supports. Green Chemistry 2015, 17 (4), 2200–2207. https://doi.org/10.1039/c4gc02375g.
(39) Muñoz García, A.; Hunt, A. J.; Budarin, V. L.; Parker, H. L.; Shuttleworth, P. S.; Ellis, G. J.; Clark, J. H. Starch-Derived Carbonaceous Mesoporous Materials (Starbon®) for the Selective Adsorption and Recovery of Critical Metals. Green Chemistry 2015, 17 (4), 2146–2149. https://doi.org/10.1039/c5gc00154d.
(40) White, R. J.; Budarin, V. L.; Shuttleworth, P. S. Other Approaches and the Commercialisation of Sustainable Carbonaceous Material Technology. RSC Green Chemistry 2015, 2015-January (32), 377–406.

(41) Budarin, V. L.; Shuttleworth, P. S.; White, R. J.; Clark, J. H. From Polysaccharides to Starbons®. RSC Green Chemistry 2015, 2015-January (32), 53–81.
(42) Shuttleworth, P. S.; Baccile, N.; White, R. J.; Nectoux, E.; Budarin, V. L. Bulk and Surface Analysis of Carbonaceous Materials. RSC Green Chemistry 2015, 2015-January (32), 311–354.
(43) Titirici, M.-M.; White, R. J.; Brun, N.; Budarin, V. L.; Su, D. S.; del Monte, F.; Clark, J. H.; MacLachlan, M. J. Sustainable Carbon Materials. Chem Soc Rev 2015, 44 (1), 250–290. https://doi.org/10.1039/c4cs00232f.
(44) Budarin, V. L.; Shuttleworth, P. S.; De bruyn, M.; Farmer, T. J.; Gronnow, M. J.; Pfaltzgraff, L.; Macquarrie, D. J.; Clark, J. H. The Potential of Microwave Technology for the Recovery, Synthesis and Manufacturing of Chemicals from Bio-Wastes. Catalysis Today 2015, 239, 80–89. https://doi.org/10.1016/j.cattod.2013.11.058.
(45) Zhang, Z.; Macquarrie, D. J.; Bruyn, M. D.; Budarin, V. L.; Hunt, A. J.; Gronnow, M. J.; Fan, J.; Shuttleworth, P. S.; Clark, J. H.; Matharu, A. S. Low-Temperature Microwave-Assisted Pyrolysis of Waste Office Paper and the Application of Bio-Oil as an Al Adhesive. Green Chem. 2014, 17 (1), 260–270. https://doi.org/10.1039/C4GC00768A.
(46) White, R. J.; Budarin, V. L.; Clark, J. H. Colloidal Construction of Porous Polysaccharide-Supported Cadmium Sulphide. Colloids and Surfaces A: Physicochemical and Engineering Aspects 2014, 444, 69–75. https://doi.org/10.1016/j.colsurfa.2013.12.043.
(47) White, R. J.; Brun, N.; Budarin, V. L.; Clark, J. H.; Titirici, M.-M. Always Look on the "Light" Side of Life: Sustainable Carbon Aerogels. ChemSusChem 2014, 7 (3), 670–689. https://doi.org/10.1002/cssc.201300961.
(48) Shuttleworth, P. S.; De Bruyn, M.; Parker, H. L.; Hunt, A. J.; Budarin, V. L.; Matharu, A. S.; Clark, J. H. Applications of Nanoparticles in Biomass Conversion to Chemicals and Fuels. Green Chemistry 2014, 16 (2), 573–584. https://doi.org/10.1039/c3gc41555d.
(49) Hunt, A. J.; Budarin, V. L.; Comerford, J. W.; Parker, H. L.; Lazarov, V. K.; Breeden, S. W.; Macquarrie, D. J.; Clark, J. H. Deposition of Palladium Nanoparticles in SBA-15 Templated Silica Using Supercritical Carbon Dioxide. Materials Letters 2014, 116, 408–411. https://doi.org/10.1016/j.matlet.2013.11.075.
(50) Carneiro, L.; Silva, A. R.; Shuttleworth, P. S.; Budarin, V.; Clark, J. H. Synthesis, Immobilization and Catalytic Activity of a Copper(II) Complex with a Chiral Bis(Oxazoline). Molecules 2014, 19 (8), 11988–11998. https://doi.org/10.3390/molecules190811988.
(51) Attard, T. M.; Watterson, B.; Budarin, V. L.; Clark, J. H.; Hunt, A. J. Microwave Assisted Extraction as an Important Technology for Valorising Orange Waste. New J. Chem. 2014, 38 (6), 2278–2283. https://doi.org/10.1039/C4NJ00043A.
(52) Wu, C.; Budarin, V. L.; Gronnow, M. J.; De Bruyn, M.; Onwudili, J. A.; Clark, J. H.; Williams, P. T. Conventional and Microwave-Assisted Pyrolysis of Biomass under Different Heating Rates. Journal of Analytical and Applied Pyrolysis 2014, 107, 276–283. https://doi.org/10.1016/j.jaap.2014.03.012.
(53) Marriott, A. S.; Hunt, A. J.; Bergström, E.; Wilson, K.; Budarin, V. L.; Thomas-Oates, J.; Clark, J. H.; Brydson, R. Investigating the Structure of Biomass-Derived Non-Graphitizing Mesoporous Carbons by Electron Energy Loss Spectroscopy in the Transmission Electron Microscope and X-Ray Photoelectron Spectroscopy. Carbon 2014, 67, 514–524. https://doi.org/10.1016/j.carbon.2013.10.024.
(54) Shuttleworth, P.; Budarin, V.; Gronnow, M. The Thermochemical Conversion of Biomass into High-Value Products: Microwave Pyrolysis. RSC Green Chemistry 2013, 38–63.
(55) Parker, H. L.; Budarin, V. L.; Clark, J. H.; Hunt, A. J. Use of Starbon for the Adsorption and Desorption of Phenols. ACS Sustainable Chemistry and Engineering 2013, 1 (10), 1311–1318. https://doi.org/10.1021/sc4001675.
(56) Fan, J.; De bruyn, M.; Zhu, Z.; Budarin, V.; Gronnow, M.; Gomez, L. D.; Macquarrie, D.; Clark, J. Microwave-Enhanced Formation of Glucose from Cellulosic Waste. Chemical Engineering and Processing: Process Intensification 2013, 71, 37–42. https://doi.org/10.1016/j.cep.2013.01.004.
(57) Fan, J.; De bruyn, M.; Budarin, V. L.; Gronnow, M. J.; Shuttleworth, P. S.; Breeden, S.; Macquarrie, D. J.; Clark, J. H. Direct Microwave-Assisted Hydrothermal Depolymerization of Cellulose. J. Am. Chem. Soc. 2013, 135 (32), 11728–11731. https://doi.org/10.1021/ja4056273.

(58) Ojeda, M.; Budarin, V.; Shuttleworth, P. S.; Clark, J. H.; Pineda, A.; Balu, A. M.; Romero, A. A.; Luque, R. Simple Preparation of Novel Metal-Containing Mesoporous Starches. Materials 2013, 6 (5), 1891–1902. https://doi.org/10.3390/ma6051891.
(59) Clark, J. H.; Pfaltzgraff, L. A.; Budarin, V. L.; Hunt, A. J.; Gronnow, M.; Matharu, A. S.; Macquarrie, D. J.; Sherwood, J. R. From Waste to Wealth Using Green Chemistry. Pure and Applied Chemistry 2013, 85 (8), 1625–1631. https://doi.org/10.1351/PAC-CON-12-09-01.
(60) Shuttleworth, P. S.; Budarin, V.; White, R. J.; Gun'Ko, V. M.; Luque, R.; Clark, J. H. Molecular-Level Understanding of the Carbonisation of Polysaccharides. Chemistry - A European Journal 2013, 19 (28), 9351–9357. https://doi.org/10.1002/chem.201300825.
(61) Dodson, J. R.; Budarin, V. L.; Hunt, A. J.; Shuttleworth, P. S.; Clark, J. H. Shaped Mesoporous Materials from Fresh Macroalgae. Journal of Materials Chemistry A 2013, 1 (17), 5203–5207. https://doi.org/10.1039/c3ta10568g.
(62) Silva, A. R.; Budarin, V.; Clark, J. H. Microwave-Assisted Immobilization of Manganese Salen Complexes: Increased Activity and Chemoselectivity in Catalytic Epoxidation. ChemCatChem 2013, 5 (4), 895–898. https://doi.org/10.1002/cctc.201200376.
(63) Pfaltzgraff, L. A.; Bruyn, M. D.; Cooper, E. C.; Budarin, V.; Clark, J. H. Food Waste Biomass: A Resource for High-Value Chemicals. Green Chem. 2013, 15 (2), 307–314. https://doi.org/10.1039/C2GC36978H.
(64) Mašek, O.; Budarin, V.; Gronnow, M.; Crombie, K.; Brownsort, P.; Fitzpatrick, E.; Hurst, P. Microwave and Slow Pyrolysis Biochar - Comparison of Physical and Functional Properties. Journal of Analytical and Applied Pyrolysis 2013, 100, 41–48. https://doi.org/10.1016/j.jaap.2012.11.015.
(65) Gronnow, M. J.; Budarin, V. L.; Mašek, O.; Crombie, K. N.; Brownsort, P. A.; Shuttleworth, P. S.; Hurst, P. R.; Clark, J. H. Torrefaction/Biochar Production by Microwave and Conventional Slow Pyrolysis - Comparison of Energy Properties. GCB Bioenergy 2013, 5 (2), 144–152. https://doi.org/10.1111/gcbb.12021.
(66) L. Parker, H.; J. Hunt, A.; L. Budarin, V.; S. Shuttleworth, P.; L. Miller, K.; H. Clark, J. The Importance of Being Porous: Polysaccharide -Derived Mesoporous Materials for Use in Dye Adsorption. RSC Advances 2012, 2 (24), 8992–8997. https://doi.org/10.1039/C2RA21367B.
(67) Budarin, V.; Ross, A. B.; Biller, P.; Riley, R.; Clark, J. H.; Jones, J. M.; Gilmour, D. J.; Zimmerman, W. Microalgae Biorefinery Concept Based on Hydrothermal Microwave Pyrolysis. Green Chemistry 2012, 14 (12), 3251–3254. https://doi.org/10.1039/c2gc36202c.
(68) Shuttleworth, P.; Budarin, V.; Gronnow, M.; Clark, J. H.; Luque, R. Low Temperature Microwave-Assisted vs Conventional Pyrolysis of Various Biomass Feedstocks. Journal of Natural Gas Chemistry 2012, 21 (3), 270–274. https://doi.org/10.1016/S1003-9953(11)60364-2.
(69) Balu, A. M.; Budarin, V.; Shuttleworth, P. S.; Pfaltzgraff, L. A.; Waldron, K.; Luque, R.; Clark, J. H. Valorisation of Orange Peel Residues: Waste to Biochemicals and Nanoporous Materials. ChemSusChem 2012, 5 (9), 1694–1697. https://doi.org/10.1002/cssc.201200381.
(70) Luque, R.; Budarin, V.; Clark, J. H.; Shuttleworth, P.; White, R. J. Starbon® Acids in Alkylation and Acetylation Reactions: Effect of the Brönsted-Lewis Acidity. Catalysis Communications 2011, 12 (15), 1471–1476. https://doi.org/10.1016/j.catcom.2011.06.008.
(71) Dodson, J. R.; Hunt, A. J.; Budarin, V. L.; Matharu, A. S.; Clark, J. H. The Chemical Value of Wheat Straw Combustion Residues. RSC Adv. 2011, 1 (3), 523–530. https://doi.org/10.1039/C1RA00271F.
(72) White, R. J.; Budarin, V. L.; Moir, J. W. B.; Clark, J. H. A Sweet Killer: Mesoporous Polysaccharide Confined Silver Nanoparticles for Antibacterial Applications. International Journal of Molecular Sciences 2011, 12 (9), 5782–5796. https://doi.org/10.3390/ijms12095782.
(73) Budarin, V. L.; Zhao, Y.; Gronnow, M. J.; Shuttleworth, P. S.; Breeden, S. W.; Macquarrie, D. J.; Clark, J. H. Microwave-Mediated Pyrolysis of Macro-Algae. Green Chem. 2011, 13 (9), 2330–2333. https://doi.org/10.1039/C1GC15560A.
(74) Shuttleworth, P. S.; Budarin, V.; Clark, J. H. Thermal Investigation of "Molten Starch." Journal of Thermal Analysis and Calorimetry 2011, 105 (2), 577–581. https://doi.org/10.1007/s10973-010-1174-1.
(75) Diyuk, V. E.; Gorlova, A. A.; Budarin, V. L.; Sidorchuk, V. V.; Yatsimirskii, V. K. Barothermal Modification of Activated Carbon with Maleic Anhydride. Theoretical and Experimental Chemistry 2011, 47 (3), 199–204.

(76) Budarin, V. L.; Shuttleworth, P. S.; Dodson, J. R.; Hunt, A. J.; Lanigan, B.; Marriott, R.; Milkowski, K. J.; Wilson, A. J.; Breeden, S. W.; Fan, J.; et al. Use of Green Chemical Technologies in an Integrated Biorefinery. Energy and Environmental Science 2011, 4 (2), 471–479. https://doi.org/10.1039/c0ee00184h.
(77) Budarin, V. L.; Shuttleworth, P. S.; Clark, J. H.; Luque, R. Industrial Applications of C-C Coupling Reactions. Current Organic Synthesis 2010, 7 (6), 614–627.
(78) White, R. J.; Antonio, C.; Budarin, V. L.; Bergström, E.; Thomas-Oates, J.; Clark, J. H. Polysaccharide-Derived Carbons for Polar Analyte Separations. Advanced Functional Materials 2010, 20 (11), 1834–1841. https://doi.org/10.1002/adfm.201000169.
(79) Budarin, V. L.; Clark, J. H.; Lanigan, B. A.; Shuttleworth, P.; Macquarrie, D. J. Microwave Assisted Decomposition of Cellulose: A New Thermochemical Route for Biomass Exploitation. Bioresource Technology 2010, 101 (10), 3776–3779. https://doi.org/10.1016/j.biortech.2009.12.110.
(80) White, R. J.; Budarin, V. L.; Clark, J. H. Pectin-Derived Porous Materials. Chemistry - A European Journal 2010, 16 (4), 1326–1335. https://doi.org/10.1002/chem.200901879.
(81) Shuttleworth, P. S.; Budarin, V.; Clark, J. H. Green Power - "Molten" Starch Adhesives. Journal of Materials Chemistry 2009, 19 (45), 8589–8593. https://doi.org/10.1039/b911342h.
(82) Budarin, V. L.; Clark, J. H.; Lanigan, B. A.; Shuttleworth, P.; Breeden, S. W.; Wilson, A. J.; Macquarrie, D. J.; Milkowski, K.; Jones, J.; Bridgeman, T.; et al. The Preparation of High-Grade Bio-Oils through the Controlled, Low Temperature Microwave Activation of Wheat Straw. Bioresource Technology 2009, 100 (23), 6064–6068. https://doi.org/10.1016/j.biortech.2009.06.068.
(83) White, R. J.; Budarin, V.; Luque, R.; Clark, J. H.; Macquarrie, D. J. Tuneable Porous Carbonaceous Materials from Renewable Resources. Chem. Soc. Rev. 2009, 38 (12), 3401–3418. https://doi.org/10.1039/B822668G.
(84) Hunt, A. J.; Budarin, V. L.; Breeden, S. W.; Matharu, A. S.; Clark, J. H. Expanding the Potential for Waste Polyvinyl-Alcohol. Green Chem. 2009, 11 (9), 1332–1336. https://doi.org/10.1039/B906607A.
(85) White, R. J.; Luque, R.; Budarin, V. L.; Clark, J. H.; Macquarrie, D. J. Supported Metal Nanoparticles on Porous Materials. Methods and Applications. Chem. Soc. Rev. 2009, 38 (2), 481–494. https://doi.org/10.1039/B802654H.
(86) Luque, R.; Budarin, V.; Clark, J. H.; MacQuarrie, D. J. Microwave-Assisted Preparation of Amides Using a Stable and Reusable Mesoporous Carbonaceous Solid Acid. Green Chemistry 2009, 11 (4), 459–461. https://doi.org/10.1039/b821392p.
(87) Luque, R.; Budarin, V.; Clark, J. H.; Macquarrie, D. J. Glycerol Transformations on Polysaccharide Derived Mesoporous Materials. Applied Catalysis B: Environmental 2008, 82 (3–4), 157–162. https://doi.org/10.1016/j.apcatb.2008.01.015.
(88) Clark, J.; Budarin, V.; Dugmore, T.; Luque, R.; Macquarrie, D.; Strelko, V. Catalytic Performance of Carbonaceous Materials in the Esterification of Succinic Acid. Catalysis Communications 2008, 9 (8), 1709–1714. https://doi.org/10.1016/j.catcom.2008.01.037.
(89) Budarin, V. L.; Clark, J. H.; Luque, R.; MacQuarrie, D. J.; White, R. J. Palladium Nanoparticles on Polysaccharide-Derived Mesoporous Materials and Their Catalytic Performance in C-C Coupling Reactions. Green Chemistry 2008, 10 (4), 382–387. https://doi.org/10.1039/b715508e.
(90) White, R. J.; Budarin, V. L.; Clark, J. H. Tuneable Mesoporous Materials from α-D-Polysaccharides. ChemSusChem 2008, 1 (5), 408–411. https://doi.org/10.1002/cssc.200800012.
(91) Barau, A.; Budarin, V.; Caragheorgheopol, A.; Luque, R.; MacQuarrie, D. J.; Prelle, A.; Teodorescu, V. S.; Zaharescu, M. A Simple and Efficient Route to Active and Dispersed Silica Supported Palladium Nanoparticles. Catalysis Letters 2008, 124 (3–4), 204–214. https://doi.org/10.1007/s10562-008-9465-x.
(92) Karimi, B.; Biglari, A.; Clark, J. H.; Budarin, V. Green, Transition-Metal-Free Aerobic Oxidation of Alcohols Using a Highly Durable Supported Organocatalyst. Angewandte Chemie International Edition 2007, 46 (38), 7210–7213. https://doi.org/10.1002/anie.200701918.
(93) Budarin, V.; Luque, R.; Macquarrie, D. J.; Clark, J. H. Towards a Bio-Based Industry: Benign Catalytic Esterifications of Succinic Acid in the Presence of Water. Chemistry - A European Journal 2007, 13 (24), 6914–6919. https://doi.org/10.1002/chem.200700037.

(94) Budarin, V. L.; Clark, J. H.; Luque, R.; Macquarrie, D. J.; Koutinas, A.; Webb, C. Tunable Mesoporous Materials Optimised for Aqueous Phase Esterifications. Green Chem. 2007, 9 (9), 992–995. https://doi.org/10.1039/B704055E.
(95) Silva, A. R.; Budarin, V.; Clark, J. H.; Freire, C.; de Castro, B. Organo-Functionalized Activated Carbons as Supports for the Covalent Attachment of a Chiral Manganese(III) Salen Complex. Carbon 2007, 45 (10), 1951–1964. https://doi.org/10.1016/j.carbon.2007.06.013.
(96) Budarin, V. L.; Clark, J. H.; Deswarte, F. E. I.; Mueller, K. T.; Tavener, S. J. 19F Magic Angle Spinning NMR Reporter Molecules: Empirical Measures of Surface Shielding, Polarisability and H-Bonding. Physical Chemistry Chemical Physics 2007, 9 (18), 2274–2283. https://doi.org/10.1039/b701023k.
(97) Budarin, V. L.; Clark, J. H.; Hale, S. E.; Tavener, S. J.; Mueller, K. T.; Washton, N. M. NMR and IR Study of Fluorobenzene and Hexafluorobenzene Adsorbed on Alumina. Langmuir 2007, 23 (10), 5412–5418. https://doi.org/10.1021/la062900k.
(98) Budarin, V. L.; Clark, J. H.; Luque, R.; Macquarrie, D. J. Versatile Mesoporous Carbonaceous Materials for Acid Catalysis. Chem. Commun. 2007, 0 (6), 634–636. https://doi.org/10.1039/B614537J.
(99) Clark, J. H.; Budarin, V.; Deswarte, F. E. I.; Hardy, J. J. E.; Kerton, F. M.; Hunt, A. J.; Luque, R.; Macquarrie, D. J.; Milkowski, K.; Rodriguez, A.; et al. Green Chemistry and the Biorefinery: A Partnership for a Sustainable Future. Green Chemistry 2006, 8 (10), 853–860. https://doi.org/10.1039/b604483m.
(100) Karimi, B.; Abedi, S.; Clark, J. H.; Budarin, V. Highly Efficient Aerobic Oxidation of Alcohols Using a Recoverable Catalyst: The Role of Mesoporous Channels of SBA-15 in Stabilizing Palladium Nanoparticles. Angewandte Chemie International Edition 2006, 45 (29), 4776–4779. https://doi.org/10.1002/anie.200504359.
(101) Budarin, V.; Clark, J. H.; Hardy, J. J. E.; Luque, R.; Milkowski, K.; Tavener, S. J.; Wilson, A. J. Starbons: New Starch-Derived Mesoporous Carbonaceous Materials with Tunable Properties. Angewandte Chemie - International Edition 2006, 45 (23), 3782–3786. https://doi.org/10.1002/anie.200600460.
(102) Bandini, M.; Luque, R.; Budarin, V.; Macquarrie, D. J. Aryl Alkynylation versus Alkyne Homocoupling: Unprecedented Selectivity Switch in Cu, Phosphine and Solvent-Free Heterogeneous Pd-Catalysed Couplings. Tetrahedron 2005, 61 (41), 9860–9868. https://doi.org/10.1016/j.tet.2005.06.082.
(103) Silva, A. R.; Budarin, V.; Clark, J. H.; Castro, B. de; Freire, C. Chiral Manganese(III) Schiff Base Complexes Anchored onto Activated Carbon as Enantioselective Heterogeneous Catalysts for Alkene Epoxidation. Carbon 2005, 10 (43), 2096–2105. https://doi.org/10.1016/j.carbon.2005.03.024.
(104) Budarin, V.; Clark, J. H.; Deswarte, F. E. I.; Hardy, J. J. E.; Hunt, A. J.; Kerton, F. M. Delicious Not Siliceous: Expanded Carbohydrates as Renewable Separation Media for Column Chromatography. Chemical Communications 2005, No. 23, 2903–2905. https://doi.org/10.1039/b502330k.
(105) Budarin, V. L.; Clark, J. H.; Tavener, S. J.; Wilson, K. Chemical Reactions of Double Bonds in Activated Carbon: Microwave and Bromination Methods. Chemical Communications 2004, No. 23, 2736–2337.
(106) Zabuga, V. Y.; Tsapyuk, G. G.; Budarin, V. L.; Yatsimirskij, V. K. Kinetics of Catalytic Oxidation of Carbon Black under the Upper Thermal Regime. Ukrainskij Khimicheskij Zhurnal 2004, 70 (9–10), 100–104.
(107) Zabuga, V. Y.; Tsapyuk, G. G.; Budarin, V. L.; Eliseeva, A. D.; Yatsimirskii, V. K. Steady-State Conditions of Catalytic Oxidation of Soot. Ukrainskij Khimicheskij Zhurnal 2004, 70 (3–4), 44–46.
(108) Budarin, V. L.; Clark, J. H.; Tavener, S. J. Surface Energy and Surface Area Measurements by 19F MAS NMR of Adsorbed Trifluoroacetic Acid. Chemical Communications 2004, 4 (5), 524–525. https://doi.org/10.1039/b315005d.
(109) Zabuga, V. Y.; Tsapyuk, G. G.; Budarin, V. L.; Yatsimirskii, V. K. Macrokinetics of Carbon Oxidation. Ukrainskij Khimicheskij Zhurnal 2003, 69 (9–10), 22–26.

(110) Clark, J. H.; Shorrock, K.; Budarin, V.; Wilson, K. Chemically Modified Mesoporous Solids and Their Use in the Polymerisation of Hydrocarbon Monomers. Journal of the Chemical Society, Dalton Transactions 2002, No. 3, 423–427.
(111) Budarin, V. L.; Clark, J. H.; Gorlova, A. A.; Boldyreva, N. A.; Yatsimirsky, V. K. Chemical Modification of Activated Carbons. Journal of Thermal Analysis and Calorimetry 2000, 62 (2), 349–352. https://doi.org/10.1023/A:1010156002389.
(112) Yatsimirsky, V. K.; Budarin, V. L.; Diyuk, V. Y.; Matzui, L. Y.; Zacharenko, M. I. The Influence of Carrier on the Critical Phenomena in CO Oxidation over NiO. Adsorption Science and Technology 2000, 18 (7), 609–619. https://doi.org/10.1260/0263617001493666.
(113) Budarin, V. L.; Diyuk, V.; Matzui, L.; Vovchenko, L.; Tsvetkova, T.; Zakharenko, M. New Prospective Ni-Catalytic Materials. Journal of Thermal Analysis and Calorimetry 2000, 62 (2), 345–348. https://doi.org/10.1023/A:1010140803562.
(114) Budarin, V. L.; Clark, J. H.; Mikhalovsky, S. V.; Gorlova, A. A.; Boldyreva, N. A.; Yatsimirsky, V. K. The Hydrophobisation of Activated Carbon Surfaces by Organic Functional Groups. Adsorption Science and Technology 2000, 18 (1), 55–64. https://doi.org/10.1260/0263617001493279.
(115) Oleynik, V. D.; Budarin, V. L.; Zaitsev, V. N. Influence of the Donor Properties of Silica-Immobilized Amines on the Thermodynamic Characteristics of Interfacial Protolytic Reactions. Adsorption Science and Technology 1999, 17 (10), 835–843. https://doi.org/10.1177/026361749901701006.
(116) Tsapyuk, G. G.; Zabuga, V. Y.; Budarin, V. L.; Boldyreva, N. O.; Yatsymirskij, V. K.; Clark, J. Kinetics of Carbon Oxidation at the Presence of Transitional Metals Oxides. Ukrainskij Khimicheskij Zhurnal 1999, 65 (1–2), 101–104.
(117) Budarin, V. L.; Korchev, A. S.; Yatsimirskii, V. K. Kinetics and Mechanism of the Deuteration of Acetone in Different Media. Theoretical and Experimental Chemistry 1998, 34 (3), 144–147. https://doi.org/10.1007/BF02764458.
(118) Zaitsev, V. N.; Oleynik, V. D.; Budarin, V. L. Evaluation of Bonded Layer Disorder from Thermodynamic Behavior of Methylaminopropyl Groups Immobilized on SiO2. Macromolecular Symposia 1998, 136, 99–102. https://doi.org/10.1002/masy.19981360114.
(119) Budarin, V. L.; Diyuk, V. E.; Zakharenko, N. V.; Eichis, B. A.; Yatsimirskii, V. K. Peculiarities of the Reduction of NiO with Carbon Monoxide Associated with a Magnetic Phase Transition in Nickel. Theoretical and Experimental Chemistry 1998, 34 (5), 283–286. https://doi.org/10.1007/BF02523263.
(120) Budarin, V. L.; Diyuk, V. E.; Yatsimirskii, V. K. The Role of Diffusion Processes in the Kinetics of Interaction of Nickel Powder with Oxygen. Ukrainskij Khimicheskij Zhurnal 1997, 63 (11–12), 23–27.
(121) Budarin, V. L.; Pechenyj, A. B.; Zajtsev, V. N. Effect of Interface Structure Peculiarities on Protolytic Equilibrium. Ukrainskij Khimicheskij Zhurnal 1997, 63 (11–12), 88–92.
(122) Yatsimirskii, V. K.; Budarin, V. L.; Oleksenko, L. P.; Lyapin, R.; Frankovich, M. Role of Critical Phenomena in the Heterogenous Crystalization of Supercooled Water. Theoretical and Experimental Chemistry 1996, 32 (3), 167–171. https://doi.org/10.1007/BF01373245.
(123) Yatsimirskii, V. K.; Budarin, V. L.; Oleksenko, L. P. Kinetics of Ice Nucleation Initiated by Molecular Crystals. Theoretical and Experimental Chemistry 1995, 30 (6), 282–285. https://doi.org/10.1007/BF00538124.
(124) Pechenyi, A. B.; Budarin, V. L.; Zaitsev, V. N.; Kalibabchuk, V. A. Kinetics of the Reaction of Cobalt(II) Phthalocyanine Complexes with Functionalized Organosilicas. Theor Exp Chem 1995, 31 (5), 249–252. https://doi.org/10.1007/BF01195578.
(125) Kuraev, O. V.; Budarin, V. L. Stochastic Parameters in the Analysis of the Kinetics of Topochemical Processes. Theoretical and Experimental Chemistry 1993, 28 (5–6), 342–346. https://doi.org/10.1007/BF00532108.
(126) Yatsimirsky, V. K.; Budarin, V. L.; Tanchuk, V. Y. Jodine Interaction with Rhodanide in Acidic Medium. Ukrainskij Khimicheskij Zhurnal 1992, 58 (11), 958–962.

(iv) Paper published in refereed conference proceeding

1. =Pfaltzgraff, L., Budarin, V. and Clark J.H., The New OPEC. In: Technical Proceedings of the 2012 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2012, Volume 3, 495 - 498.
2. = Clark J.H., Budarin, V., Macquarrie, D.J. and Breeden S.W., Starbons® - A New Family of Bio-based Mesoporous Materials Derived from Polysaccharides. In: Technical Proceedings of the 2012 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2012, Volume 3, 495 - 498.
3. >Budarin, V.L., Fan, J., Gronnow, M.J., Shuttleworth, P.S. and Clark, J.H., Microwave pyrolysis of structural components of biomass. In: Proceedings of the Bioten Conference on Biomass Bioenergy and Biofuels: CPL Press, 2011.
4. =Budarin, V., Ross, A.B., Biller, P., Clark, J., Jones, J.M., Gilmour, D.J. and Zimmerman, W., Hydrothermal microwave pyrolysis of microalgae. In: Proceedings of the Bioten Conference on Biomass Bioenergy and Biofuels, CPL Press, 2011.
5. =Shuttleworth, P.S., Budarin, V.L., Breeden, S.W., Macquarrie, D.J., Luque, R.L. and White, R., and Clark J.H. STARBONS®: Preparation, applications and transition from laboratory curiosity to scalable product. In: Technical Proceedings of the 2011 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2011, Volume 3, 766-770.
6. =Hunt, A.J., Dodson, J.R., Parker, H.L., Budarin, V.L., Matharu, A.S. and Clark, J.H., Industrial symbiosis and green chemistry: one's waste is another's resource! In: Technical Proceedings of the 2011 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2011, Volume 3, 758-762.
7. Gronnow, M.J., Budarin, V.L., Fan, J., Shuttleworth, P.S., Macquarrie, D.J. and Clark, J.H., Microwave pyrolysis of biomass. In: Technical Proceedings of the 2011 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2011, Volume 3, 758-762.
8. =Lanigan, B., Vitaliy Budarin, V., Clark, J., Deswarte, F., Shuttleworth, P. and Wilson, A., Microwave processing as a green and energy efficient technology for the production of energy and chemicals from biomass and energy crops. In: GPE-EPIC Proceedings: Institute National Politechnique de Toulouse, 2009.
9. =Clark, J.H., Budarin, V.L., Deswarte, F.E.I., Hunt, A., Milkowski, K., Macquarrie D. J. and Luque, R.A., Novel Materials from Renewable Resources. In: Greek Green Chemistry Conference Proceedings: Patras, 2007.
10. =Deswarte, F.E. I., Hunt, A. J., Budarin, V. L., Clark, J. H., Hardy, J. J. E. and Kerton, F. M., Expanded starch as renewable stationary phase for column and flash chromatography. In: 230th National Meeting of the American-Chemical-Society Proceedings: Washington, DC, Amer. Chemical Soc., Washington, DC, USA: Abstracts of Papers of the American Chemical Society, 697, 2005.
11. =Tavener, S. J. and Budarin, V. L., In: 229th National Meeting of the American-Chemical-Society Proceedings: San Diego, Amer. Chemical Soc., Washington, DC, USA: Abstracts of Papers of the American Chemical Society, 704, 2005.
12. >Budarin V.L., Clark J.H., Mikhalovsky S.V. and Yatsimirsky V.K., Physico-chemical properties of activated carbons modified by organic functional groups. In: Carbon'99. 24th Biennial Conference on Carbon Proceedings: Amer. Carbon Soc., Charleston, SC, USA.,Vol. 2, pp. 748-749, 1999.
13. =Yatsimirsky, V.K., Boldyreva, N.A., Budarin, V.L. and Ischenko, E.V., Catalysis by Metal Clusters. In: Japan-FSU Catalysis Seminar- Catalysis Science and Technology for 21 Century Life proceedings: Catalysis Society of Japan, Tsukuba, Japan, 18-23, 1994.
14. =Yatsimirskiy, V.K. and Budarin, V.L., Peculiarities of methylene blue reduction kinetics on cluster catalysis. In: ISHC-9- International symposium on homogeneous catalysis Proceedings: Jerusalem (Israel), PBD, 422-423, 1994.

(v) All other works

Research Funding

Dr. Budarin has been involved in a number of projects in the fields of material science and microwave chemistry as a contract researcher: INTAS Grant, EPSRC, Carbon Trust Grant, Proof of Concept award, SUNLIBB. In addition, seven research grants, with a total value of £2.5M, have been based directly on two innovative research areas (mesoporous carbonaceous materials derived from polysaccharides and low temperature microwave activation of biomass) which Dr. Budarin has developed and has been the Lead Scientist for more than seven years: Alterego (Alternative Energy Forms for Green Chemistry), EPSRC (Chemicals from Sustainable Feedstocks), Carbon Trust (Low Temperature Microwave-mediated Pyrolysis of Biomass), ERDF (Microwave Pyrolysis Demonstrator) , SUNLIBB (Sustainable Liquid Biofuels from Biomass Biorefining), Proof of concept Award (Yorkshire Forward) and EPSRC follow up (Commercial Development of Starbon Technologies for Catalysis).

Dr. Budarin was honored to be invited to the interviewed teams for the EPSRC Renewable feedstocks call (Swindon, 16/10/12) and Carbon Trust Carbon Trust Fund: Grant for Research and Development Proposal (London, 14/08/08) and also to the tenderers meeting (FERA, York, 10/12/10).

Research Funding obtained:

1. White Rose University Consortium; Collaboration Fund: Energy and fuels from thermal chemical conversion of biomass; PI: Dr. Wu, C. (University of Leeds); Co-investigators: Dr. Sharifi,V. (University of Sheffield), Dr. Budarin V. (University of York), 2013; £15,000.
2. SPARK awards: Development of a novel seaweed derived cytokinin-based plant growth promoter, PI: Dr. Mark Gronnow, 2013; £5,000.
3. EPSRC: Renewable Chemicals from Sustainable Feedstocks via High-Throughput Methods; PI: Prof Clark, J. H.; Co-investigator: Dr. Budarin, V. L., 2013-2017; £817,686.
4. Industrial fund; Circa Group: Applications for levoglucosenone; PI: Professor Clark, J.H., 2013; £27,000
5. 7th Framework Programme; ALTEREGO (Alternative Energy Forms for Green Chemistry); PI: Dr. Macquarrie, D., 2012-2014; £524,000.
6. CSIC i-LINK+-0636: Nanocomposite Enhancement Of Naturally Derived Mesoporous Carbons; PI: Dr. Ellis, G. (Spain), International Collaboration with the ICTP (Instituto de Ciencia y Tecnología de Polímeros), Madrid, Spain, 2013 – 2014; €29,100
7. 7th Framework Programme; SUNLIBB (Sustainable Liquid Biofuels from Biomass Biorefining): Second Generation Biofuels – EU Brazil Coordinated Call; PI: Simon Mcqueen Mason (Department of Biology, CNAP), 2010-2013; £263,996.
8. EPSRC; Follow on Fund Proposal: Commercial Development of Starbon Technologies for Catalysis; PI: Professor Clark, J.H.; Co-investigator: Dr. MacQuarrie, D., 2010-2011; £178,707.
9. METRC (Molecular Engineering Translation Research Centre) Innovation Awards: Char by Microwave-mediated Pyrolysis, PI: Professor Clark, J.H., 2009-2010; £47,926.
10. ERDF (European Regional Development Fund): Biorefinery Microwave Demonstrator, as a part of £20M Yorkshire Forward and Science City York contract, PI: Professor Clark, J.H., 2009-2012; £1,000,000.
11. DEFRA-link project LK0850: Inorganic Polymer Bio-composites. PI: Professor Clark, J.H., 2008-2013; £599,000.
12. Yorkshire Forward; Proof of Concept award: Develop processes for the conversion of biomass into fuels and chemicals; PI: Professor Clark, J.H., 2008; £70,000.
13. Carbon Trust Fund; Grant for Research and Development Proposal: Low Temperature Microwave-mediated Pyrolysis of Biomass for the Production of Transport Fuel Feedstocks. PI: Professor Clark, J.H., 2009-2011; £499,634.
14. Yorkshire forward Fund; White rose scheme Proposal: Hydrothermal microwave pyrolysis of microalgae. PI: Dr. Ross, A., 2009; £15,000.
15. Yorkshire Enterprise Fellowship grant: Accumulation of commercial technical data on oil recovery from oil-seeds and conversion of biomass to solid bio-fuel by exploiting a novel process, PI: Budarin, V., 2008; £10,000.
16. EPSRC Gr/R82807/01; PI: Prof Clark, J. H., 2002-2004; £129,031,

17. INTAS Grant; European Commission: Biomimetic Catalysts; PI: Prof Clark, J. H., 2001-2004; £9,342.

Research Students

i) **Supervision**

Dr. Budarin is currently co-supervising the following PhD students:

1. Mr. Li Tianzong "Citrus peel biorefinery" The University of York, UK. Joint supervision with Professor James Clark, start October 2013.
2. Mr. Hayman Abdoul. The University of York, UK. Joint supervision with Professor James Clark, currently registered. 2011-2014/15

Dr. Budarin also actively helped supervise three PhD students (attended supervisor meetings, experiment planning, data analysis and main day-to-day contact resulting in 15 joint publications: 2 with Dr. B. Lanigan, 10 with Dr. R. White and 3 with Dr. Peter Shuttleworth):

1. Dr. Brigid A. Lanigan "Microwave processing of lignocellulosic biomass for production of fuels", supervised by Professor James Clark and Dr. Fabien Deswart. York, UK, 2010.
2. Dr. Robin J. White "Porous polysaccharide-derived materials" supervised by Professor James Clark, York, UK, 2008.
3. Dr. Peter S. Shuttleworth. "Switchable adhesives for carpet tiles" supervised by Professor James Clark, York, UK, 2007.

Completed PhD students:

1. Dr. Vitaliy Diyuk, "The mechanism of catalytic and topochemical red-ox reactions in Ni-NiO-gas phase system". Taras Shevchenko Kiev University, Kiev, Ukraine. Joint supervision with Professor Yatsimirsky. Dr. V. Diyuk was awarded a PhD in 2000.

MSc students:

2013

1. Mr.Kuisuke Tomono, joint supervision with Dr. T. Farmer and Dr. A. Hunt, has been awarded a degree.
2. Mr.Fergal Byrne, joint supervision with Dr. T. Farmer and Dr. A. Hunt, has been awarded a degree.
3. Mr.James Reilly, joint supervision with Dr. T. Farmer and Dr. A. Hunt, has been awarded a degree.
4. Mr.Benjamin Tumilty, has been awarded a degree.
5. Mr.Shengjie Zhao, has been awarded a degree.
6. Ms Siying Tang, has been awarded a degree.

2012

7. Ms. Yanrui Feng, joint supervision with Dr. A. Hunt, has been awarded a degree.
8. Mr.Philippe Labarthe, joint supervision with Dr. A. Hunt, has been awarded a degree.

2011

9. Ms. Rui Zhang, joint supervision with Dr. A. Hunt, has been awarded a degree.
10. Ms. Jane Yi, has been awarded a degree.
11. Mr. Zhanrong Zhang, joint supervision with Dr. A. Hunt, has been awarded a degree.

2010

12. Mr.Yizhe Zhao, has been awarded a degree.
13. Ms.Theeta Sricoth, has been awarded a degree.
14. Ms.Arpatorn Piyawan, has been awarded a degree.

2009

15. Ms. Kathryn Louise Miller, joint supervision with Dr. A. Hunt, has been awarded a degree.

2007

16. Mr. Temidayo Oyetunde, joint supervision with Dr K. Milkowski and Prof J.H. Clark has been awarded a degree.

2003

17. Mr. Oleksandr Zaderko, has been awarded a degree, Taras Shevchenko University (TSU), Kiev, Ukraine.

2002

18. Mr.Oleksandr Kurakevich, has been awarded a degree, TSU, Kiev, Ukraine.

2001

19. Mr.Liudmyla Grishchenko, has been awarded a degree, TSU, Kiev, Ukraine.

1997

20. Mr. Andrey Korchev, has been awarded a degree, TSU, Kiev, Ukraine.

1991

21. Mr.Vsevolod Tanchuk, has been awarded a degree, TSU, Kiev, Ukraine.

Dr. Budarin supervises visiting students throughout the year e.g. Erasmus Mundus.

ii) **Examining**

1. External examiner, PhD viva. Candidate: Miss Alina Korobeinyk. Thesis title: "Synthesis of polyacrylonitrile/ multi-walled carbon nanotube composites for potential bone replacement therapy", University of Brighton, Brighton, UK. 21st November 2012.

2. MSc dissertations assessment, September 2013.

Other research activities and distinctions

a) *Patents:*

1. Clark, J, Budarin V., Pfaltzgraff, L and Luque, R, "Citrus waste valorization". 2013
2. White, R.J., Clark, J.H., Budarin, V.L. and Macquarrie. D.J., "Polysaccharide Derived Materials". EP2203401 (A2). 2010.
3. Budarin, V.L., Milkowski, K.J, Shuttleworth, P., Lanigan, B., Clark, J.H., Macquarrie, D.J. and Wilson, A., "Microwave torrefaction of biomass". WO 2010001137 (A3). 2010
4. Luque, R., Macquarrie, D.J., Budarin, V.L., Clark, J.H., Milkowski, K. and White R.J., "Carbonaceous Materials". US2009078913 (A1). 2009.
5. Luque, R., White, R.J., Budarin, V.L. and Clark, J.H., "Metal Nanoparticles". WO2009044146 (A1). 2009.
6. Budarin, V.L., Clark, J.H., Dodson, J.R. and Milkowski, K.J., "Biorefinery products in structural materials". WO2009087360 (A1). 2009.

b) *Invited Lectures:*

1. "Microwave assisted hydrothermal treatment of biomass". White Rose UK-China Workshop on Energy. Beijing- Nanjing, China. 16-22 March 2013. As a part of invited White Rose Universities mission to China aimed at developing collaborative projects with Chinese universities in the field of bio energy. Follow up meetings are being arranged for autumn 2013.
2. "Potential Routes to Green Chemicals and Materials using application of supercritical fluid extraction, catalytic pyrolysis and microwave activated processes", Borregaard, 5th R&D conference, Norway. 8 May 2012.
3. "Microwave pyrolysis of biomass", Organic Chemistry Department, The University of Cordoba, Cordoba, Spain. 21 June 2011.
4. "STARBON technology (starch-based heterogeneous catalysts for aqueous conditions", VTT Technical Research Centre, Helsinki, Finland. 14 March 2011.

5. "Microwave use and the recovery of chemicals from cocoa pods", Nestle/University of York meeting, The University of York, York, UK. 14 October 2011
6. "Chemistry of the polysaccharide", CARBOSORB workshop: Novel adsorbents and filtration devices for water and effluent remediation, Brighton, UK. 12-13 April 2010.

c) Conference presentations:

1. Clark, J.,* Budarin, V., Parker, H., Ozel, M., de Bruyn, M., Borisova, S., Macquarrie,D. and Abdoul, H., New Sustainable Mesoporous Carbon Materials for Environmental Protection, CESEP-13:5th International Conference on Carbon for Energy Storage/Conversion and Environment Protection, Muelheim (Germany) 23-26 September, 2013 (Oral).
2. Budarin, V.,* Shuttleworth, P.S. and Clark, J., Starbons: Preparations and Applications, CESEP-13:5th International Conference on Carbon for Energy Storage/Conversion and Environment Protection, Muelheim (Germany) 23-26 September, 2013.
3. Budarin, V.* Microwave-assisted processing of biomass for energy products, UREM 2013: Umeå Renewable Energy Meeting - Bio4Energy, Umeå (Sweden), 25-27 February, 2013 (Oral).
4. Budarin, V.,* Dodson. J., Hunt, A. and Clark, J. Mesoporous materials from fresh macroalgae, PSP 2012: Plant and Seaweed Polysaccharides Workshop, Nantes (France), 17-20 July, 2012 (Oral).
5. Mašek, O.,* Budarin, V., Gronnow, M., Crombie1, K., Brownsort, P. and Fitzpatrick, E., Microwave and slow pyrolysis biochar – physical properties, 19th International Symposium on Analytical and Applied Pyrolysis, Linz (Austria), 21-25 May, 2012 (Oral).
6. Mesquita, L.M. , Salvador, J.A.R., Budarin, V.L., Shuttleworth, P.S. and Clark, J.H., Ritter Reaction Catalyzed by Starbon®400-SO3H: One-step Conversion of Epoxides into Acylamino-Hydroxy Compounds, Starbons day conference, Kings Manor, York (UK), 2012 (Poster).
7. Budarin, V.* Starbons and their applications, NORSC: the Northern Universities Sustainable Chemistry Initiative & NEPIC Sustainable Chemistry for Industry, Durham (UK), 24 April 2012, (Oral).
8. Shuttleworth, P.S.,* Parker, J., Budarin, V.L., Breeden, S. and Clark, J.H., Use of catalysts in thermal biomass conversion: adding value to polysaccharides. 1st International Congress on Catalysis for Biorefineries, Catbior, Malaga (Spain), 2-5 October, 2011 (Oral & Poster).
9. Shuttleworth, P.S.,* Budarin, V.L. and Clark, J.H. Starbons: preparation and applications. Medical Devices and Carbon Materials: Current Issues in Health and the Environment, Brighton (UK), 21-22 September, 2011, (Oral).
10. Gronnow, M.J., Budarin, V.L., Fan, J., Shuttleworth, P.S.,* De bruyn, M., Macquarrie, D.J. and Clark , J.H., Low Temperature Microwave Irradiation as an Activator of Biomass Pyrolysis, 13th International Conference on Microwave and High Frequency Heating, Toulouse (France), 5-8 September, 2011 (Oral).
11. Breeden, S.W.,* Shuttleworth, P.S., Budarin, V.L., Macquarrie, D.J., Luque, R.L., Sherwood, R.S. and Clark, J.H., STARBONS®: Preparation and Applications of Biomass Derived Catalysts, RRB7: Renewable resources and Biorefineries International conference, Antwerp (Belgium), 8-10 June, 2011 (Oral and poster).
12. Shuttleworth, P. S.,* Budarin, V. L. and Clark, J. H., Switchable adhesives for carpet tiles: a breakthrough in sustainable flooring, The Third Annual Carpet Recycling UK Conference, Birmingham (UK), 5 July, 2011 (Oral).
13. Shuttleworth, P.S.,* Budarin, V.L., Breeden, S. W., Macquarrie, D.J., Luque, R.L., White, R. and Clark , J.H., STARBONS®: Preparation, applications and transition from laboratory curiosity to scalable product, TechConnect World, Boston, Massachusetts (USA), 13-16 June, 2011 (Oral).
14. Shuttleworth, P.S., Budarin, V. L.,* and Clark, J. H., Molten polysaccharides, TA Instruments Materials Characterisation Seminar, Bradford (UK), 23 September, 2011 (Poster).
15. Budarin, V.L.,* Fan, J., Gronnow, M.J., Shuttleworth, P.S. and Clark, J.H. Microwave pyrolysis of structural components of biomass. Bioten: Biomass, Bioenergy, Biofuels, Biorefineries, Birmingham (UK), 21-23 September, 2010 (Poster).

16. Budarin, V., Ross, A.B.,* Biller, P., Clark, J., Jones, J.M., Gilmour, D.J. and Zimmerman, W. Hydrothermal microwave pyrolysis of microalgae. Bioten: Biomass, Bioenergy, Biofuels, Biorefineries, Birmingham (UK), 21-23 September, 2010 (Poster).
17. Shuttleworth, P.S., Budarin, V. and Clark, J.H., Molten Starch adhesives, ESTAC-10: 10th European Symposium on Thermal Analysis and Calorimetry, Rotterdam (The Netherlands), 20-27 August, 2010 (Oral & Poster).
18. Shuttleworth, P.S., Budarin, V. and Clark, J.H., Starbon® – thermally controlled high surface area, mesoporous materials, ESTAC-10: 10th European Symposium on Thermal Analysis and Calorimetry, Rotterdam (The Netherlands), 20-27 August, 2010 (Poster).
19. Shuttleworth, P.S.,* Breeden, S., Budarin, V.L., Clark J.H. and MacQuarrie, D., Starbons. RRB6: 6th International Conference on Renewable Resources and Biorefineries, 7-9 June, 2010, Dusseldorf, Germany (Poster).
20. Supanchaiyamat, N., Clark, J. H., Matharu, A. S., Budarin, V. L., Hunt, A. J., Shuttleworth, P. S. and Parker, J., Starch and its potential use in new materials, ACS 14th Annual Green Chemistry & Engineering Conference, Capital Hilton, Washington (USA), 21-23 June, 2010 (Poster).
21. Shuttleworth, P.S.,* Budarin, V. L. and Clark, J. H., Starbon®, RSC Thermal Methods Group meeting; Manchester (UK), 24 November 2010 (Poster).
22. Budarin, V. L.,* Shuttleworth, P. S., Gronnow, M. J. and Clark, J. H., Microwave pyrolysis of structural components of Biomass, RSC Thermal Methods Group meeting; Manchester (UK), 24 November, 2010 (Poster).
23. Shuttleworth, P.S., Budarin, V., Macquarrie, D., and Clark, J. H., Novel surface controllable mesoporous polysaccharide derived materials and their uses, 20th Polymer Networks Group Meeting, Goslar (Germany), 29 August – 2 September, 2010 (Poster).
24. Lanigan, B.,* Budarin, V., Clark, J., Deswarte, F., Shuttleworth, P. and Wilson, A., Microwave processing as a green and energy efficient technology for the production of energy and chemicals from biomass and energy crops. GPE-EPIC: The International Green Process Engineering Congress and the European Process Intensification Conference, Venice (Italy). 14-17 June, 2009 (Poster).
25. Budarin,V.* and Hunt, A., Biomass-Based Materials: Starbon, British Carbon Group Spring Meeting: Carbon in Health, The Environment And Energy, Manchester (UK), 13 March, 2009 (Oral).
26. Clark, J.H.,* Budarin, V.L., Deswarte, F.E.I., Hunt, A., Milkowski, K., Macquarrie D. J. and Luque, R.A., Novel Materials from Renewable Resources,2nd National Symposium of Green. Chemistry, Patras (Greece), 8-10 March, 2007 (Oral).
27. Nextoux, E.F., Shuttleworth, P.S., White, R.J. , Budarin, V.L. and Clark, J.H., Determination of surface chemical modified carbons and polysaccharides via TGA and TG-IR, ESTAC 9: 9th European Symposium of Thermal Analysis and Calorimetry, Krakow (Poland), 28-31 August, 2006 (Poster).
28. Yatsimirsky, V.K., Diyuka, V.Y., Zaderkoa, A.N., Tavener, S. J., Budarin, V.L.* and Clark J.H., Physico-Chemical Properties of Bromine Containing Carbonaceous Materials, The British Carbon Group Workshop - Carbon Materials: Science and Art, Brighton (UK), 21 – 22 March, 2005 (Poster).
29. Macquarrie. D.M.,* Deswartes, F., Andrew Hunt, A., Clark, J.H., Milkowski,K., Hardy,J. and Budarin, V., Novel Materials For Catalysis And Analysis Derived From Renewable Resources, International conference analytical chemistry and chemical analysis (AC&CA-05) devoted to 100 anniversary of Anatoly Babko, Kyiv (Ukraine), 11-16 September, 2005 (Oral).
30. Budarin, V.L., Clark, J.H., Mikhalovsky, S.V.* and Yatsimirsky, V.K. Physico-chemical properties of activated carbons modified by organic functional groups. The American Carbon Society's Twenty-Fourth Biennial Conference on Carbon (CARBON '99). Charleston (South Carolina), 11-16 July, 1999 (Oral).
31. Yatsimirsky, V.K., Budarin, V.L.,* Diyuk, V.Y., Matzui, L.Y. and Zacharenko, M.I. The influence of carrier on the critical phenomena in CO oxidation over NiO, 4th Polish-Ukrainian Symposium on Theoretical and Experimental Studies of Interfacial Phenomena and Their Technological Application, Lublin (Poland), 01-03 September, 1999 (Poster).

32. Yatsimirsky, V.K.,* Boldyreva, N.A., Budarin, V.L. and Ischenko, E.V., Catalysis by Metal Clusters, Japan-FSU Catalysis Seminar- Catalysis Science and Technology for 21 Century Life, Tsukuba (Japan), 18-23 September, 1994 (Oral).
33. Yatsimirskiy, V.K.* and Budarin, V.L., Peculiarities of methylene blue reduction kinetics on cluster catalysis, ISHC-9- International symposium on homogeneous catalysis, Jerusalem (Israel), 21-26 August, 1994 (Oral).

d) Exhibitions:

1. Budarin V. (shareholder, scientific advisor and inventor of Starbon Ltd.) and Stefanini, P. (Executive Chairman of Starbon Ltd.) were invited to participate in the BIOCHEM Accelerator Forum during Achema 2012 Frankfurt Exhibition (June 18 - 22, 2013, Frankfurt Am Main, Germany. *Starbon Ltd. was declared the winner of the Accelerator Forum business plan competition.
2. Budarin, V., attended NISP NE 'Packaging Event' - BALTIC Centre for Contemporary Art, Gateshead, 15th June 2012. Information about packaging waste sector (10.7 million tonnes in the UK per annum) was up to date, which help to develop research strategy of microwave assisted waste utilization.
3. Budarin, V., Wilson, A.J. and Clark J.H., Microwave pyrolysis of biomass. VentureFest Yorkshire, 10th February 2010. Stand promoting low temperature microwave pyrolysis process.
4. Budarin, V., Gronnow, M. and Shuttleworth, P. presented at 152nd Great Yorkshire Show (July 13-15, 2010). Stand promoting green chemistry, biofuels and microwave pyrolysis process.
5. Exhibition: Science City York Network & Partnership Dinner. Thursday 19 November 2009. Hospitium, York, UK. The exhibition has provided an excellent opportunity for establish contacts with regional partners.

e) Visiting research:

1. Institute of Polymer Science & Technology, ICTP-CSIC, Madrid, Spain, 13/06/13-23/06/13. The main target of the visit was to develop novel starch-based nano-composites within collaborative i-LINK project.
2. Organic Chemistry Department, The University of Cordoba, Cordoba, Spain, 16/06/11-26/06/11.The main target of the visit was to develop microwave-assisted hydrolysis of orange peel.
3. Chemistry department of the Alicante University, Spain, 21/03/99-24/04/99. The role of the physical properties of the activated carbon surface in the different catalytic process has been studied extensively within collaborative INTAS-UKRAINE-1997 project.
4. Clean Synthesis Technology Laboratory, the York University, York, UK. Four visits as a part of INTAS-UKRAINE-1997 and INTAS-2000 programs academic were took place: i) 01/10-26/12/1998; ii) 01/06-30/11/2000; iii) 15/06- 31/08/2001; iv) 15/02/-30/04/2002. During these visit the methods of the modification of the activated carbon surface has been studied developed.
5. Division of Chemical Enzymology, Chemistry Department of Moscow University, Russia. 03/06-20/10/1986. As a part of collaborative project catalytic activity of carbonyl clusters of iron has been investigated.
6. Institute of Inorganic Chemistry SB RAS, Novosibirsk, Russia (01/06-30/06/1984). As a part of collaborative project iron carbonyl clusters have been synthesized and characterized.

f) Referee for RSC, Wiley and Elsevier Journals.
g) Based on developed method of kilograms scale Starbon production an agreement with Sigma-Aldrich regarding the distribution of Starbon was achieved.

ADMINISTRATION, LEADERSHIP AND MANAGEMENT

Departmental administrative posts

1. Member of Board of Studies, Department of Chemistry, the University of York (2011- present).

Other administrative work and distinctions

1. As GCCE Principal Scientist Dr. Budarin is responsible directly for advising and supporting the Director of the Center in the running of all research within the GCCE. He leads on many of the most important research projects and has a leading role in major publications. He actively participates in all the research within the Green Chemistry Center (2011- present).
2. Leader of Microwave Technology Platform (MW TP) of GCCE, a dynamic team which develops technical solutions for applications that utilise microwave technologies ranging from laboratory scale reactors to the semi-scale facility at the BDC. The group assists in delivering current MW projects and writing new grant proposals. MW TP also develops opportunities for informal dissemination of knowledge and good teaching microwave experimental techniques practice amongst GCCE members, visitors, external research collaborators and industry. The TP consists of two post-doctoral researchers, a technician, three PhD students, MSc students and visitors (2011- present).
3. Line Management responsibility: From Q4 2013, Dr. Budarin will have line management responsibility for a technician on the current EPRSC (Renewable Chemicals from Sustainable Feedstocks via High-Throughput Methods) grant, and supervisory responsibility for a PDRA on the same project.
4. Member of Green Chemistry Centre of Excellence (GCCE) Board meeting (regular meetings to discuss current research project/teaching activities and strategic planning for future group activities) (2007 - present).
5. Member of Green Chemistry Advisory Group (2011 - present).
6. Shareholder, scientific advisor and inventor of Starbon Technology Ltd. Member of Starbon Technology Ltd Operations Group (2012 - present).
7. Academic member of NORSC (Northern Sustainable Chemistry Initiative) (2010 - present).
8. Member of the Kiev State University Academic Senate (2000 - 2002).
9. Member of the Chemistry Department Academic Senate, Kiev State University (1991 - 2002).
10. Chairman of Ukrainian student research projects competition panel in the field of chemistry (1991 - 1998).

SUPPORTING STATEMENT

Dr .V. Budarin graduated from Kiev State University (Ukraine) with an MSc (1983) and PhD (1988) in Chemistry. Following postdoctoral research at Kiev State University he became an Assistant Professor in the Department of Physical Chemistry in 1991. In 1996 he was appointed to a Lectureship in Chemistry at Kiev State University and was promoted rapidly to Associate Professor in 1998. In 2002 he moved to the Green Chemistry Centre of Excellence (GCCE), the University of York as a researcher and from 2006 he was promoted to Senior Scientist and Discovery Leader. From 2012 he became Head of the Microwave TP Group and the GCCE's Principle Scientist – a group consisting of over 70 people.

Dr. Vitaliy Budarin has a wide expertise range, from experimental skills (he is familiar with usage of all modern chemical laboratory equipment), high quality scientific research, state-of-the-art technology innovations to supervision and leadership of students at all levels and backgrounds. This experience has led to more than 140 research papers and conference proceedings in peer reviewed journals, six patent applications and five book chapters. Dr. Budarin's h-factor is 35. Based on the two research areas which Dr. Budarin has personally developed (mesoporous carbonaceous materials derived from polysaccharides and low temperature microwave activation of biomass) seven research grants with a total value of £2.5M have been obtained to date: Alternative Energy Forms for Green Chemistry, Chemicals from Sustainable Feedstocks, Low Temperature Microwave-mediated Pyrolysis of Biomass, Microwave Pyrolysis Demonstrator, Sustainable Liquid Biofuels from Biomass Biorefining, Proof of concept Award and Commercial Development of Starbon Technologies for Catalysis.

Over the last ten years Dr Budarin has worked as a senior researcher, being involved in the planning and advancement of chemical technological projects with many internationally recognizable companies, such as BP, Nestle, GSK, Unilever, Croda, Reckitt Benckiser, Sappi and Tata Steel. One of the fruitful outcomes of such collaborations was an ERDF project in 2010 when a novel semi-scale processer for biomass conversion was developed and then engineered and manufactured in collaboration with the French company Sairem. In addition, to gain a better understanding of the influence of surface properties of solid materials on their catalytic and adsorption properties a new type of mesoporous carbonaceous material (Starbons) with tunable functionality was innovated. It was demonstrated and then published that the functionality of Starbon (especially concentration and nature of oxygen containing functional groups) plays a crucial role in their applications in the field of heterogeneous catalysis, chromatography and adsorption.

Based on Dr. Budarin's research in the area of semi-scale production of Starbons, an agreement was made with Sigma-Aldrich to sell the products via their catalogue, which led to significant industrial interest, and as a consequence prompted the University of York to launch a spin-out company, Starbon Technology Ltd. Dr. Budarin is one of the major shareholders, scientific advisor and inventor. The initial success of the Starbon team business potential and innovation has led to a prestigious Rushlight award for use of Starbons in water purification.

In addition to his own research program, Dr. Budarin helps to manage other projects, taking a highly active role in lab, project and management meetings. Dr. Budarin is the head of the microwave research TP group and the GCCE's Principle Scientist, member of the Board of Studies at the University of York, member of Green Chemistry Centre of Excellence Board and shareholder of Starbon technology Ltd. As the head of Microwave TP he supervises the work of visitors, research students, technicians and postdocs. He also coordinates Starbon research within the GCCE. Dr. Budarin provides research support for BDC (the Biorenewables Development Centre) projects to help local companies with their processing issues, taking part in their planning, experimental design, data analysis and report writing.

Dr. Budarin was awarded a Yorkshire Enterprise fellowship (a development program consisting of training in business finance, accounting, leadership skills and intellectual property management) in 2010 as well as having work featured on BBC radio 2, 4 and printed press. On the 22nd of July he was invited to take part in an internationally recognized discussion initiated by the RSC Chemistry World regarding the mechanism of microwave activation of organic reactions featuring the views of some of the most distinguished fellows within this expertise area, giving further credential to his status within the field of MW pyrolysis.