Oleg V. Kolosov

AFFILIATION Department of Physics,
Lancaster University,
Lancaster, LA1 4YB, UK

Date of birth: 19th December 1959, Kiev, Ukraine
Nationality: British
e-mail: o.kolosov@lancaster.ac.uk

Web-site: www.nano-science.com
Research link: http://www.research.lancs.ac.uk/portal/en/people/oleg-kolosov

CURRENT AND PAST POSTS

2015 – present Professor of Nanoscience, Group Leader, Physics Department, Lancaster University, UK
2017-present Deputy Director, **2015 – '16,** Interim Founding Director, Lancaster Material Science Institute (LMSI).
2006 - 2015 Reader in Condensed Matter Physics, Director of PG studies, Physics Department, Lancaster University, UK
2000 – '06 Director, Innovation and Sensor Technology, Symyx Technologies Inc., CA, USA (2003-'06),
in 2000-'02 Director, Polymer Properties Screening, on research leave from University of Oxford, UK)
1996- '02 EPSRC Advanced Fellow, Senior Research Fellow at Materials Department, University of Oxford, UK
1994 – '96 Research Fellow, Materials Department, University of Oxford, UK
1992 – '94 Research Fellow, National Institute for Advanced Interdisciplinary Research, Mech. Eng. Lab., Tsukuba, Japan
1986 – '92 Staff Scientist, Institute of Chemical Physics, Russian Academy of Sciences, Moscow, Russia
1984 – '88 Post-Graduate Scholar, Moscow Institute of Physics and Technology, Moscow, Russia

ACADEMIC AND PROFESSIONAL QUALIFICATIONS

2008 Certificate in Academic Practice 1, Lancaster University, UK.
1989 Ph.D. in Physics and Mathematics, Moscow Institute of Physics and Technology (Moscow PhysTech).
1982 Diploma (M.Sc. honours, summa cum laude,) in Biophysics, Moscow Institute of Physics and Technology.

PROFESSIONAL AND PERSONAL DEVELOPMENT

Professional activities

2017 - present EPSRC FLUENCE Advisory Board (UK-Netherlands *FELIX* free-electron laser project).
2015 – present Member of EPSRC Peer Review College, Reviewer for *Israel & Swiss Science Foundations, EC, Royal Society*.
2017 - present Deputy Chair, Scanning Probe Microscopy Committee, *Royal Microscopical Society*, UK.
2015 - present Member of Scientific Advisory Board, Scientific Reports, *Nature Publishing Group*.
2013 - present Founder and Director of Lancaster Materials Analysis Ltd., Lancaster University high-tech spin-off.
2013 - 2016 Member, *Royal Society International Exchanges Panel*.
2009-'13 External Examiner, Postgraduate Certificate in Nanotechnology, Oxford University, UK.
2008-present Grant reviewer for USA DOE; Israel & Swiss Science Foundations, EC, Hong Kong Research Grants Council.
from 2006 Member of Scientific Advisory Boards: Ampirica LLC and Anasys Instruments, USA.
1999 Winner, Metrology for World Class Manufacturing Award, Frontier Science and Measurement, UK.
1996 – '02 Research Fellow (1994-'96 Visiting Scholar) of Wolfson College, Oxford University, UK.
1996-'99 Member of Structural Materials College, EPSRC, UK.
1995 & **1997** Paul Instrument Fund Awards as PI (c/o the Royal Society), UK.
1998 Senior JSPS (Japanese Society of Promotion of Science) Fellow, Japan.
1996 Invited Professor (Professeure Invité), University of Montpellier II, France.
1995 – '99 Consultant, Bede Scientific Instruments Ltd, Durham, UK.
1992 – 1994 Fellow of Science and Technology Agency of Japan.

Conferences and symposia organised, chaired.

2021 Symposium co-chair, Microscience and Microscopy Congress, MMC2021, Manchester, UK.
2019 Chair, Symposium on Nanoscale materials characterisation, MMC -2019, Manchester, UK.
2018 Co-chair, SPM Symposium, MRS Spring meeting, Phoenix, USA.
2017 Chair and organiser, Nanoscale Probing of Materials, Symposium chair, MMC2017, Manchester, UK.
2015 FFHMT, Session Chair, Ottawa, Canada.
2014 EUROTHERM 103, Member of Scientific Committee, Lyon, France 2014
2013 Symposium Chair of JSAP-MRS conference, Kyoto, JAPAN (2013).
2013 International workshop QMNTIA 2013 (Quant. Micro and Nano-Thermal Imaging and Analysis), Reims, France.
2011 Symposium Chair, MRS Fall Meeting, Boston, USA and Editor of MRS Proceedings.
2010 - Session Chair, Advanced Microscopy Symposium, MRS Fall Meeting, Boston, USA.
2009 Symposium on Nanomechanics, ECOSS 26, European conference on surface science, Parma, Italy

Professional memberships

Since 2017 Member of Royal Microscopical Society, UK

since 2010 Member of the Institute of Physics, UK
1994–'07 Member of American Physical Society, USA
2001-'07 Member of American Chemical Society; Member of Materials Research Society, USA.
1995-'97 Member of the Network of European Scientists and Technologists (NEST) in Japan

TEACHING

Undergraduate teaching.

- **Member of the final year Exam Committee,** responsible for ~ 20% of final year exam papers.
- **PHYS233** (Thermodynamics – 2nd year core course, 2017 start, ~120 students, 3.6).
- **PHYS133** (Oscillations and waves, 1st year core course, 2018 start, 160 students)
- **PHYS358** (Advanced microscopy and Spectroscopy, 2008-2011, 3rd-4th year options course)
- **PHYS322** (Statistical Physics – 3rd year core course, 2009-2013, ~90 students, 3.9-4.1)
- **PHYS102** (Classical mechanics – 1st year core course, 2015-2018, ~200 students, scores 3.6-4.0).
- **PHYS451/452** (Supervision – MPhys project and literature review).

Postgraduate teaching and research supervision.

- **2009 – present Ph.D. External Examiner**. University of Manchester, UK **(2010);** University of Manchester, UK **(2012)**; University of Leeds, UK **(2012**); University of Royal Holloway, UK **(2013)**, Leiden University, Belgium **(2014)**; University of Lyon, France **(2015)**, Kings College London **(2016)**, University of Royal Holloway **(2016)**, University of Warwick **(2017)**, University of Glasgow **(2018)**, University of Oxford **(2019).**
- **(2009-'13) External Examiner, UG and taught PG course** - Postgraduate Certificate in Nanotechnology course (on average 15-20 students/year), University of Oxford, UK
- "**2D Materials Nanomechanics"** – convenor and a lecturer of a PG teaching lab (Lancaster-Manchester NowNANO DTC).
- **PhD supervision.** PhD (Graduated – **12**, Current – **4)**.

Accomplishments in teaching (2012 - present).

Inter-University and National level achievements

2017 Supervised student Nick Kay won Outstanding Springer Thesis Prize – for PhD thesis on nanomechanics of 2D materials with PhD theses published by Springer.
2016 Supervised student Claire Tinker won Outstanding Springer Thesis Prize – with PhD theses on nanoscale characterisation of amyloids for understanding neurodegenerative deceases published by Springer.
2013- present "**2D materials Nanomechanics**" teaching laboratory was rated among the top lab courses in University of Manchester – Lancaster University Joint *Graphene NowNANO* Doctoral Training Centre.
2012 MPhys project supervisee wins "***Best Physics Student of the Year Award"*** (SET International Awards are the "… most important Science, Engineering and Technology awards for undergraduates" in UK and Ireland). This is the first such award for a Lancaster University project student in any department.
2010 MPhys project supervisee is nominated for "***Best Physics Student of the Year Award"*** - first such for Lancaster Physics.
2014 PhD 3rd year supervisee is awarded ***JUNO prize for Research Excellence*** at Physics Department.
2014 PhD 1st year supervisee is awarded 2014 ***Dean's Award for excellence in Ph.D. studies***.
2012 PhD 1st year supervisee is awarded ***JUNO prize for Research Excellence*** at Physics Department.
2011 PhD 2nd year supervisee was awarded 2011 ***Dean's Award for excellence in Ph.D. studies***.

RESEARCH

Research and Scholarly work (summary as of 2017)

Web of Knowledge/ISI	Total found	Google Scholar	Total found
Publications	127	Publications	313
Citations	2446	Citations	5236
h-index	26	h-index	35
Citations per item	19.3	i10-index	87

Journal papers (* - peer reviewed, ‡ - paper with lead or major contribution by OVK)

178*‡. Harzheim, A., C. Evangeli, O. V. Kolosov and P. Gehring. "Direct mapping of local Seebeck coefficient in 2D material nanostructures via scanning thermal gate microscopy." 2D Materials 7(4): 041004. (2020)

177*‡. Longacre, A., M. Martin, T. Moran, O. V. Kolosov, E. Schneller, A. J. Curran, M. Wang, J. Dai, L. S. Bruckman, J.-N. Jaubert, K. O. Davis, J. L. Braid, R. H. French and B. D. Huey. "Direct nanoscale mapping of open circuit voltages at local back surface fields for PERC solar cells." Journal of Materials Science. (2020)

176*‡. Mucientes, M., R. McNair, A. Peasey, S. Shao, J. Wengraf, K. Lulla, B. J. Robinson and O. Kolosov. "Mapping nanoscale dynamic properties of suspended and supported multi-layer graphene membranes via contact resonance and ultrasonic scanning probe microscopies." Nanotechnology 31(41): 415702. (2020)

175*. Mousavi, S. T., G. R. Harper, S. Municoy, M. D. Ashton, D. Townsend, G. H. K. Alsharif, V. K. Oikonomou, M. Firlak, S. Au-Yong, B. E. Murdock, G. R. Akien, N. R. Halcovitch, S. J. Baldock, M. Fazilati, O. V. Kolosov, B. J. Robinson, M. F. Desimone and J. G. Hardy. "Electroactive Silk Fibroin Films for Electrochemically Enhanced Delivery of Drugs." Macromolecular Materials and Engineering 305(6): 2000130. (2020)

174*ǂ. Vyas, V., M. Lemieux, D. A. Knecht, O. V. Kolosov and B. D. Huey. "Micro-Acoustic-Trap (μAT) for microparticle assembly in 3D." Ultrasonics Sonochemistry 57: 193-202. (2019)

173*ǂ. Robinson, B. J., M. E. Pumarol and O. V. Kolosov. "Correlation of shear forces and heat conductance in nanoscale junctions." Physical Review B 100(23): 235426. (2019)

172*. Guthrie, A., R. P. Haley, A. Jennings, S. Kafanov, O. Kolosov, M. Mucientes, M. T. Noble, Y. A. Pashkin, G. R. Pickett, V. Tsepelin, D. E. Zmeev and V. Efimov. "Multimode probing of superfluid 4He by tuning forks." Applied Physics Letters 115(11): 113103. (2019)

171*ǂ. Gehring, P., M. v. d. Star, C. Evangeli, J. J. L. Roy, L. Bogani, O. V. Kolosov and H. S. J. v. d. Zant. "Efficient heating of single-molecule junctions for thermoelectric studies at cryogenic temperatures." Applied Physics Letters 115(7): 073103. (2019)

170*ǂ. Evangeli, C., J. Spiece, S. Sangtarash, A. J. Molina-Mendoza, M. Mucientes, T. Mueller, C. Lambert, H. Sadeghi and O. Kolosov. "Nanoscale Thermal Transport in 2D Nanostructures from Cryogenic to Room Temperature." Advanced Electronic Materials 0(0): 1900331. (2019)

169*ǂ. El Sachat, A., J. Spièce, C. Evangeli, A. J. Robson, M. Kreuzer, E. Chavez, M. d. R. Rodríguez-Laguna, M. Sledzinska, C. M. Sotomayor Torres, O. V. Kolosov and F. Alzina. "Nanoscale mapping of thermal and mechanical properties of bare and metal-covered self-assembled block copolymer thin films." ACS Applied Polymer Materials. (2019)

168*ǂ. Spiece, J., C. Evangeli, K. Lulla, A. Robson, B. Robinson and O. Kolosov. "Improving accuracy of nanothermal measurements via spatially distributed scanning thermal microscope probes." Journal of Applied Physics **124**(1): 015101. (2018)

167*ǂ. Harzgeim, A., Spiece, J., Evangeli, C., McCann, E., Falko, V., Sheng, Y., Warner, J. H., Briggs, G. A. D., Mol, J. A., Gehring, P. & Kolosov, O. V., Geometrically Enhanced Thermoelectric Effects in Graphene Nanoconstrictions, In : Nano Letters. 18, 12, p. 7719-25 (2018).

166*. Black, A., Roberts, J., Acebron, M., Bernardo Gavito, R., Alsharif, G., J. Urbanos, F., Juarez, B. H., Kolosov, O. V., Robinson, B. J., Vázquez De Parga, A. L., Granados, D. & Young, R. J., Large Area Heterostructures from Graphene and Silica Encapsulated Colloidal Quantum Dots via the Langmuir-Blodgett Method, ACS Appl Mater and Interfaces. 10, 8, p. 6805-6809 (2018).

165*ǂ. Degueldre, C., Fahy, J., Kolosov, O. V., Wilbraham, R. J., Döbeli, M., Renevier, N., Ball, J. & Ritter, S., Mechanical Properties of Advanced Gas-Cooled Reactor Stainless Steel Cladding After Irradiation, J of Mater Eng and Performance. 27, 5, p. 2081-2088 (2018).

164*ǂ. Improving accuracy of nanothermal measurements via spatially distributed scanning thermal microscope probes, Spiece, J., Evangeli, C., Lulla, K., Robson, A., Robinson, B. & Kolosov, O., 7/07/2018, In : Journal of Applied Physics. 124, 1, 7 p., 015101.

163*ǂ. Sachat, A., Reparaz, J., Spiece, J., Alonso, M., Goni, A., Vaccaro, P., Wagner, M., Kolosov, O. V., Torres, C. & Alzina, F. Thermal transport in epitaxial Si1-xGex alloy nanowires with varying composition and morphology, *Nanotechnology.* 28, 50, 15 p., 505704 (2017)

162*ǂ. Gehring, P., Harzgeim, A., Spiece, J., Sheng, Y., Rogers, G., Evangeli, C., Mishra, A., Robinson, B. J., Porfyrakis, K., Warner, J. H., Kolosov, O. V., Briggs, A. & Mol, J. A. Field-Effect Control of Graphene–Fullerene Thermoelectric Nanodevices, *Nano Letters.* 17, 11, p. 7055-7061 (2017).

161*ǂ. Robinson, B. J., Bailey, S. W. D., O'Driscoll, L. J., Visontai, D., Welsh, D. J., Mostert, A. B., Mazzocco, R., Rabot, C., Jarvis, S., Kolosov, O. V., Bryce, M. R. & Lambert, C. J. Formation of two-dimensional micelles on graphene: a multi-scale theoretical and experimental study, *ACS Nano*, 11(3) :3404-3412, (2017).

160ǂ. Kolosov O. Quantum effects: Heat flow in atomic bottlenecks. *Nat Nano*. 2017;12(5):402-3.

159*ǂ. Nazarenko, M., Rosamond, M., Gallant, A. J., Kolosov, O. V., Dubrovskii, V. G. & Zeze, D. A. A simplified model to estimate thermal resistance between carbon nanotube and sample in scanning thermal microscopy, 15/11/2017 In : Journal of Physics D: Applied Physics. 50, 49, 8 p., 494004

158*. Gregori M, Taylor M, Salvati E, Re F, Mancini S, Balducci C, Forloni, G, Zambelli, V, Sesana, S., Michail, M., Kolosov, O.V., Tinker-Mill, C. L, Sherer, M., Harris, S., Fullwood, N.J., Masserini, M., & Allsop, D., Retro-inverso peptide inhibitor nanoparticles as potent inhibitors of aggregation of the Alzheimer's Aβ peptide. *Nanomedicine: Nanotechnology, Biology and Medicine.* 2017;13(2):723-32.

157*ǂ. Dinelli F, Pingue P, Kay ND, Kolosov OV. Subsurface imaging of two-dimensional materials at the nanoscale. *Nanotechnology*. 2017;28(8):085706.

156*. Esro M, Kolosov O, Jones PJ, Milne WI, Adamopoulos G. Structural and Electrical Characterization of SiO2 Gate Dielectrics Deposited from Solutions at Moderate Temperatures in Air. *ACS Applied Materials & Interfaces*.;9(1):529-36 (2017).

155*ǂ. Esro M, Kolosov O, Stolojan V, Jones PJ, Milne WI, Adamopoulos G. Solution-Processed Neodymium Oxide/ZnO Thin-Film Transistors wit Electron Mobility in Excess of 65 cm V−1 s−1. *Advanced Electronic Materials*. 3(4):1700025 (2017).

154*ǂ.Timofeeva M, Bolshakov A, Tovee PD, Zeze DA, Dubrovskii VG, Kolosov OV. Scanning thermal microscopy with heat conductive nanowire probes. *Ultramicroscopy*.;162:42-51 (2016).

153*. Jackson MJ, Kolosov O, Schmoranzer D, Skrbek L, Tsepelin V, Woods AJ. Measurements of Vortex Line Density Generated by a Quartz Tuning Fork in Superfluid ^{4} 4 He. *Journal of Low Temperature Physics*;183(3):208-14 (2016).

152*ǂ. R. Mazzocco, B. J. Robinson, C. Rabot, A. Delamoreanu, A. Zenasni, J. W. Dickinson, C. Boxall, and O. V. Kolosov, Surface and interfacial interactions of multilayer graphitic structures with local environment, *Thin Solid Films. 585, p. 31-39 9 p.* (2015).

151*. Bin Esro, M., Mazzocco, R., Vourlias, G., Kolosov, O., Milne, W. I. & Adamopoulos, G., Solution processed lanthanum aluminate gate dielectrics for use in metal oxide-based thin film transistors, In : *Applied Physics Letters*. 106, 5 p.203507 (2015).

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149*. E. A. Anyebe, A. M. Sanchez, S. Hindmarsh, X. Chen, J. Shao, M. K. Rajpalke, T. D. Veal, B. J. Robinson, O. Kolosov, F. Anderson, R. Sundaram, Z. M. Wang, V. Falko, and Q. Zhuang, Realization of Vertically Aligned, Ultrahigh Aspect Ratio InAsSb Nanowires on Graphite, *Nano Letters,* (2015)

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147*ǂ. Robinson, B., Giusca, C., Gonzalez, Y., Kay, N., Kazakova, O. & Kolosov, O., Structural, optical and electrostatic properties of single and few layers MoS2: effect of substrate, *2D Materials*. 2, 1, 8 p.015005 (2015).

146*. Manuel Rivas, Varun Vyas, Aliya Carter, James Veronick, Yusuf Khan, Oleg V. Kolosov, Ronald G Polcawich, Bryan D. Huey, 'Nanoscale Mapping of In-Situ Actuating Micro Electro Mechanical Systems with AFM', J Mat. Res. 30, :429-441 (2015)

145*ǂ. Kay, N, Robinson, B, Falko, V, Novoselov, K & Kolosov, O, 'Electromechanical sensing of substrate charge hidden under atomic 2D crystals' *Nano Letters*, vol 14, no. 6, pp. 3400-3404., (2014)

144*ǂ. Robinson, B & Kolosov, O Probing nanoscale graphene-liquid interfacial interactions via Ultrasonic Force Spectroscopy, *Nanoscale*, vol 6, no. 18, pp. 1080616, 2014)

143*ǂ. Tinker-Mill, C, Mayes, J, Allsop, D & Kolosov, O, 'Ultrasonic force microscopy for nanomechanical characterization of early and late-stage amyloid-β peptide aggregation' *Nature Publishing Group, Scientific Reports*, vol 4, 4004 (2014)

142*ǂ. D. Tovee, P, Pumarol, M, C. Rosamond, M, Jones, R, C. Petty, M, A. Zeze, D & V. Kolosov, O, 'Nanoscale resolution scanning thermal microscopy using carbon nanotube tipped thermal *probes' Phys. Chem. Chem. Phys.*, Vol. 16, No. 3, p. 1174-1181, (2014).

141*ǂ. J. Bosse, I. Grishin, Y.G. Choi, B.-k. Cheong, S. Lee, O. Kolosov, B.D. Huey, 'Nanosecond Switching in GeSe Phase Change Memory Films by AFM', *Appl. Phys. Lett., vol 104, no. 5, 053109.* (2014).

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139*ǂ. Bosse, J. L.; Timofeeva, M.; Tovee, P. D.; Robinson, B. J.; Huey, B. D.; Kolosov, O. V.,. Nanothermal characterization of amorphous and crystalline phases in chalcogenide thin films with SThM, *J Appl Phys* 116, 134904 (2014).

138*ǂ. Zhuang, Q, Anyebe, E, Sanchez, AM, Rajpalke, MK, Veal, TD, Zhukov, A, Robinson, B, Anderson, F, Kolosov, O & Falko, V 2014, 'Graphitic platform for self-catalysed InAs nanowires growth by molecular beam epitaxy'. *Nanoscale Research Letters*, vol 9, 321., (2014)

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136*ǂ. Bosse, J, Grishin, I, Huey, B & Kolosov, O Nanomechanical morphology of amorphous, transition, and crystalline domains in phase change memory thin films *Appl. Surf. Sci,*, vol 314, pp. 151-157., (2014)

135*ǂ. J. L. Bosse, P. D. Tovee, B. D. Huey, and O. V. Kolosov, Physical mechanisms of megahertz vibrations and nonlinear detection in ultrasonic force and related microscopies, *J Appl.Phys.,* 115, 144304 (2014);

134*ǂ. J. Mayes, C. Tinker-Mill, O. Kolosov, H. Zhang, B. J. Tabner and D. Allsop, β-Amyloid fibrils in Alzheimer's disease are not inert tombstones when bound to copper ions but can degrade hydrogen peroxide and generate reactive oxygen species, *J Biol. Chem.* (2014).

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132*ǂ. B. Robinson, C. Rabot, R. Mazzocco, A. Delamoreanu, A. Zenasni, O. Kolosov, Nanomechanical mapping of graphene layers and interfaces in suspended graphene nanostructures grown via carbon diffusion, *Thin Solid Films,* vol 550, pp. 472–479. (2014).

131*ǂ. S. Ahlstrom, I. Bradley, M. Clovecko, T. Guénault, E.A. Guise, R. Haley, O. Kolosov, M. Kumar, P. McClintock, G. Pickett, E. Polturak, M. Poole, I.A. Todoshchenko, V. Tsepelin, A. Woods, Response of a Mechanical Oscillator in Solid 4He, *J J Low Temp. Phys.* (2013).

130*ǂ. A.B.G. Trabelsi, F.V. Kusmartsev, B. Robinson, A. Ouerghi, O.E. Kusmartseva, O. Kolosov, R. Mazzocco, M.B. Gaifullin, M. Oueslati, Charged nano-domes and bubbles in epitaxial graphene, *Nanotechnology,* 25 165704 (17pp) (2014).

129*ǂ. D. Sercombe, S. Schwarz, O. Del Pozo-Zamudio, F. Liu, B. J. Robinson, E. A. Chekhovich, I. I. Tartakovskii, O. Kolosov, A. I. Tartakovskii, Dielectric surface and capping effects on optical properties of a few atomic monolayer thick MoS2, *Nature Publishing Group, Scientific Reports,* vol 3, 03489. (2013).

128*ǂ. B. Robinson, N. Kay, O. Kolosov, Nanoscale interfacial interactions of graphene with polar and non-polar liquids, *Langmuir*, 29 7735-42 (2013)

120*ǂ. P.D. Tovee, O. V. Kolosov. Nanoscale resolution immersion scanning thermal microscopy, *Nanotechnology*, 24, *46*, 465706 9 pp. (2013).

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126*ǂ. V. Parthsarathy, P.L. McClean, C. Hölscher, M. Taylor, C. Tinker, G. Jones, O. Kolosov, E. Salvati, M. Gregori, M. Masserini, D. Allsop, A novel retro-inverso peptide inhibitor reduces amyloid deposition, oxidation and inflammation and stimulates neurogenesis in the APPswe/PS1ΔE9 mouse model of Alzheimer's Disease, *PLoS ONE* 8, no. 1: e54769 (2013).

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2017	Physics Department, Delhi University, Delhi, India.
2017	Bruker SPM users meeting, Leeds, UK.
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2015	IITC – 2015, Grenoble, France.
2015	University of York, University of Nottingham – colloquia.
2015	International interconnect technology/materials for advanced metallization conference, Grenoble, France.
2014	Materials Research Society Fall Meeting, Boston, MA, USA.
2014	Kamerling Onnes Laboratory, Leiden, Netherlands, 2013.
2014	Institute of Material Science Colloquia, University of Connecticut, Storrs, CT, USA.
2013	International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Japan.
2013	Centre for Nanotechnology Innovation, NEST, Scuola Normale, Pisa, Italy.
2013	QMNTIA 2013 (Quantitative Micro and Nano-Thermal Imaging and Analysis), Reims, France.
2013	Clarendon Laboratory Colloquia, Physics Department, Oxford University, Oxford, UK.
2013	NPL (National Physical Laboratory) Colloquia, Teddington, UK.
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2013	Bruker nanotechnology users seminar, Warwick, UK
2013	International Symposium on Molecular Electronics, Lancaster, UK
2012	4th Multifrequency AFM Conference, Madrid, Spain.
2012	BIT's Annual World Congress of Advanced Materials, Bejing, China.
2012	The International Conference on Graphene and its Applications, Loughborough, UK.
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24. Kolosov, O. V., Kay, N., Robinson, B. J., Novoselov, K. S. & Dinelli, F., Mapping nanosecond time scale nanoelectromechanical phenomena in 2D Materials on nanometre length scale via ultrasonic and heterodyne force microscopies, 3/07/2017, MMC2017, Manchester, Speech.

23. San Juan Mucientes, M. & Kolosov, O. V., Mapping of vibrational modes of nanoscale membranes via scanning probe microscopy, 3/07/2017 2 p. MMC2017, Manchester, Abstract.

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21. Evangeli, C., Spiece, J., Robson, A. J., Kay, N. & Kolosov, O. V., Scanning Thermal Microscopy on 2D Materials at cryogenic temperatures, 3/07/2017 2 p. MMC2017, Manchester, Abstract.

20. Robson, A. J., Spiece, J., Evangeli, C., Ritasalo, R., Matvejeff, M., Grigoras, K., Prunnila, M. & Kolosov, O. V., Structural Characterisation of ALD coated Porous Si via Beam-Exit Cross-Sectional Polishing, 3/07/2017 5 p., MMC2017, Manchester, Abstract.

19. Kolosov, O. V., Measurements of nanoscale thermal properties of materials via Scanning Thermal Microscopy (SThM): Challenges and solutions, 12/06/2017 1 p., MMC2017, Manchester, Speech

18. Robinson, B. J. & Kolosov, O. V., Correlation of Heat Transport and Shear Forces in Nanoscale Junctions, 20/04/2017, Speech

17. Kolosov, O. V., Spiece, J. & Robinson, B. J., Probing Nanoscale Heat Transport in Liquid Environments—Contact and Non-Contact Immersion Scanning Thermal Microscopy (iSThM), 18/04/2017, MRS Spring Meeting, Phoenix, USA, Abstract

Kolosov, O. V., Kay, N., Novoselov, K. S., Robinson, B. J. & Dinelli, F, Probing Interfaces, Hidden Charges and ns Time-Scale Nanoelectromechanics of 2D Materials via Ultrasonic SPM,. 1/03/2017, MRS Spring Meeting, Phoenix, USA, Abstract

16. Spiece, J., Evangeli, C., Robson, A. J., Robinson, B. J., Alzina, F. & Kolosov, O. V. Quantitative Measurements of Intrinsic Thermal Conductivity of Surface and Buried Nanoscale Layers via Cross-Sectional Scanning Thermal Microscopy – X-SThM, 1/03/2017, MRS Spring Meeting, Phoenix, USA, Abstract.

15. Robinson, B. J., Kolosov, O. V., Bailey, S. W. D., Bryce, M. R., Jarvis, S. & Lambert, C. J., Surface Functionalization of Graphene via the Controlled Assembly of 2D Micelles, MRS Spring Meeting, Phoenix, USA, 1/03/2017, Speech.

14. Alsharif, G., Robinson, B. J. & Kolosov, O. V. 52 1 p., Micro and Nanoscale Mapping of Electrical Characterization of Graphene and Semiconductor Heterostructures. 24/07/2016 p. ANM 2016, Aveiro, Portugal, Abstract

13. Kolosov, O. V., Kay, N., Spiece, J., Alsharif, G., Robinson, B. J. & Dinelli, F., Nano-mapping of Surface and Subsurface Physical Properties of 2D materials, 25//06/2016 p. 18 1 p., ANM 2016, Aveiro, Portugal, Abstract.

12. Bin Esro, M., Kolosov, O. V., Cho, J. H., Milne, W. I. & Adamopoulos, G., Structural and electrical characterization of SiO2 gate dielectrics grown from solutions at moderate temperature in air, 05/2016, EMRS 2016, Lille, France, Speech.

11. Spiece, J., Robinson, B. J. & Kolosov, O. V., SThM of 2D materials: nanoscale interactions and multiple parameters, 05/2015, EMRS 2015, Lille, France, Abstract.

10. Kolosov, O., Robinson, B. & Pumarol Crestar, M. Direct probing of nanoscale heat transport phenomena via scanning thermal and shear force microscopies, 2015 1 p. EMRS 2015, Lille, France, Abstract

9. Kolosov, O., Kay, N., Dinelli, F., Robinson, B., Falko, V. & Pingue, P., Exploring buried interfaces and nanoelectromechanical devices in 2D materials – effects of elastic anisotropy, 2015, EMRS 2015, Lille, France, Abstract.

8. Afouxenidis, D., Kolosov, O., Vourlias, G., Krier, A., Milne, W. I. & Adamopoulos, G, High-mobility Gallium Indium Zinc Oxide-based thin film transistors grown by Spray Pyrolysis in Air, 2015, EMRS 2015, Lille, France, Poster.

7. Kolosov, O. & Robinson, B. Immersion scanning thermal microscopy: probing nanoscale heat transport in liquid environments, 2015 Proceedings of the 2nd International Conference on Fluid Flow, Heat and Mass Transfer.Ottawa, 4 p. 176, Proceedings

6. Bin Esro, M., Kolosov, O., Vourlias, G., Krier, A., Milne, W. I. & Adamopoulos, G, Low-voltage ZnO thin-film transistors employing Nd2O3 high-k dielectrics deposited by spray pyrolysis in air, 2015, EMRS 2015, Lille, France, Poster

5. Spiece, J., Kolosov, O. & Robinson, B. 2015, Quantitative Nanothermal Study of 2D materials by SThM and Finite Elements Simulations, Graphene Week 2015, Manchester, Abstract.

4. Robinson, B., Spiece, J., Tovee, P. & Kolosov, O Scanning thermal microscopy and finite elements studies of 2D materials, 2015, Graphene Week 2015, Manchester, Abstract

3. Bin Esro, M., Mazzocco, R., Vourlias, G., Krier, A., Milne, W. I., Kolosov, O. & Adamopoulos, G. Solution processed a-LaAlO3 gate dielectrics for their applications in thin film transistors employing metal oxide semiconducting channels, 2015, EMRS 2015, Lille, France, Poster.

2. The formation of two-dimensional micelles on graphene, Robinson, B., Bailey, S., Mazzocco, R., Bryce, M. R., Lambert, C. & Kolosov, O. 2015, ICMAT, Singapore, Abstract.

1. Kay, N., Robinson, B., Novoselov, K. S. & Kolosov, O., Time-dependant electrostatic and electromechanical phenomena in Graphene NEMS, 2015, ICMAT, Singapore, Abstract.

5 Most significant publications.

1. B.J. Robinson, M. Pumarol, O.V. Kolosov, Shear_Forces_and_Heat_Conductance_in_Nanoscale_Junctions, Physical Review Letters, (2018) under review.

2. Kolosov O. V. and Yamanaka K., Nonlinear Detection of Ultrasonic Vibrations in an Atomic Force Microscope, *Japanese J. Appl. Phys. Lett.,* 32 Part.2 (Letters), No.8A, pp.L1095-L1098, (1993)

3. Dinelli F, Pingue P, Kay ND, Kolosov OV. Subsurface imaging of two-dimensional materials at the nanoscale. *Nanotechnology*. 2017;28(8):085706.

4. Cuberes, M. T.; Assender, H. E.; Briggs, G. A. D.; Kolosov, O. V. Heterodyne force microscopy of PMMA/rubber nanocomposites: nanomapping of viscoelastic response at ultrasonic frequencies. *J.Phys. D: Appl. Phys* 33(19), 2347-2355. . (2000)

5. Gehring, P., Harzgeim, A., Spiece, J., Sheng, Y., Rogers, G., Evangeli, C., Mishra, A., Robinson, B. J., Porfyrakis, K., Warner, J. H., Kolosov, O. V., Briggs, A. & Mol, J. A. Field-Effect Control of Graphene–Fullerene Thermoelectric Nanodevices, *Nano Letters.* 17, 11, p. 7055-7061 (2017).

TRANSLATIONAL WORK.

Impact generated by research activities

	Impact area, description of the IP	IP – patents & applications (year)	Industrial sector & companies currently using the IP	External web references
	Instrumentation for semiconductor industry: imaging of subsurface and 3D structure of nanoscale devices	*US 9,082,587B2 (2016)* *EP 2,537,017B1 (2015)*	Semiconductor and Scientific instrumentation companies: LMA Ltd. (LU spin-off, 2014)	http://www.highbeam.com/doc/1P3-2435666231.html
	Oil and gas exploration: probing oil and gas physical properties via micro-machined sensors.	*US 7,721,590* (2010) *US 7,562,557 (2009)* *US 7,043,969* (2006)	Oil and gas exploration companies. Baker Hughes Inc.	http://www.bakerhughes.com/news-and-media/resources/brochures/in-situ-fluids-explorer-ifx
	Automotive MEMS sensors: motor oil/fluids condition monitoring.	*US 8,732,938* (2014) *US 7,210,332* (2007)	1st/2nd tier Automotive industries suppliers: TE Connectivity Inc.	http://www.meas-spec.com/fluid-property-sensors/fluid-property-sensors.aspx
4	MEMS/NEMS sensors, analogue/ digital IC's: sensor interface, on-chip lock-in amplifier, vector analyser.	US 7,225,081 (2007) US 7,158,897 (2007)	Semiconductor industry, IC manufacturers: Analog Devices, Inc.	http://www.analog.com/en/rfif-components/direct-digital-synthesis-dds/ad5933/products/product.html

Media reports (2009 – present)

Year	Subject	Media reports
2014	New approach to explore pathogens in the early stages of Alzheimer decease	http://www.sciencedaily.com/releases/2014/04/140401122336.htm http://medicalxpress.com/news/2014-04-imaging-tool-insight-alzheimer.html http://www.labnews.co.uk/news/sewing-machine-inspires-imaging-tool-for-alzheimers/ http://www.thehealthsite.com/news/the-humble-sewing-machine-provides-fresh-insights-on-alzheimers-origins/ http://www.biotechniques.com/news/Tools-of-the-Trade/biotechniques-350276.html#.VFKMrPmsV8F
2014	New Lancaster spin-off in high-tech instrumentation	http://www.insidermedia.com/insider/north-west/111690-lancaster-university-launches-spin-out http://metrc.co.uk/news/latestnews/lancastermaterialsanalysis.aspx?p=1
2014	New Critical Mass EPSRC project in biomedicine	https://www.stfc.ac.uk/3007.aspx?p=1 http://www.myscience.org.uk/news/2014/a_brighter_future_for_cancer_diagnosis-2014-lancaster
2012	Top Physics Student of the Year Award to the supervised student	http://www.npl.co.uk/news/best-physics-student-of-2012 http://www.graphene-nownano.manchester.ac.uk/news-and-events/
2011	Patent applied for in high-tech field	http://www.highbeam.com/doc/1P3-2435666231.html
2010	Physics Student of the Year Award nomination to supervised student	http://www.lancaster.ac.uk/sci-tech/news/001008/

MANAGEMENET/LEADERSHIP.

University Duties

In 2015-2016 by invitation from PVC Steve Decent I served as an interim director of Lancaster Material Science Institute (MSI) organising in 2015 the successful MSI pre-launch with 200+ participants from industry, academia and funding agencies. I was in charge of shaping initial activity of the MSI including public materials, presence in the virtual space and enabling the effective start-up of newly appointed MSI 50th anniversary lecturers. I currently serve as a Deputy Director of MSI with particular responsibility for PG studentships and facilitating MSI-Departments research and funding coordination.

Departmental duties

2014 - present Head (**2014 - '15** Interim Head) of Experimental Condensed Matter Experimental Research Division.
2017 – present Group leader in Experimental Condensed Matter Experimental Research Division.
2008 -'13 and 2014-'15 Director of Postgraduate Admissions and Postgraduate Studies.

ii.2) Summary of accomplishements (Director of PG Admissions and Studies 2008-'13)

- PG enrolment increased by ~ 50% from average 12-14 to ~20 p.a., notwithstanding a decrease of RCUK direct PG funding.
- The share of enrolment of self-funded and government-funded overseas students at Physics has increased to about 50%.
- Working closely with FST Graduate School Committee and University Graduate School I produced a paper for the PG entry requirements (language), resulting in new University-wide regulations.

- Created a new successful degree scheme of "*PhD in Nanoscience*" that is now responsible for 15% of Physics applications.
- Facilitated inter-university collaborations (with Manchester NowNANO and NowGRAPHENE doctoral training centres) contributing to new CDT bids and international collaborations in PhD training.

External funding - awarded grants (2009-present)

Year	Role	Research project	Granting body (code)	Income
2018-'29	PI	3D mapping of active semiconductor nanostructures	EPSRC/Compound Semiconductor Hub	£40,000
2017-'19	CI	Single molecule bond chemical mapping with SPM	Royal Society (Paul Instrument Fund)	£75,000
2017-'18	PI	Travel grant to prepare RS-CNR and EU proposal	CNR, Italy	€3,000
2017-'18	PI	Smart windows and coatings – GCRF proposal preparation	EPSRC/Lancaster University	£3,900
2013–'17	PI	*QUANTIHEAT* – Nanothermal metrology of materials	EC (FP7) (PYA7032)	£484,000
2013–'16	PI	*SCANCAN* - Spectrochemical imaging of tissues (Critical Mass)	EPSRC EP/K023373/1 (PYA7016)	£289,000
2011–'13	PI	*GRENADA* - Graphene for nano-scaled applications	EC (FP7) (PYA7941)	£294,000
2011-'15	PI	*FUNPROB* - Functional Semiconductor Nanowire Probe	EC (FP7) (PYA7964)	£38,000
2011-'15	CI	Quasiparticle Imaging and Superfluid Flow at ULT	EPSRC (EP/I028285/1)	£886,000
2009-'13	PI	*Materials World Network*- Phase Change Materials	EPSRC/NSF (EP/G06556X/1)	£198,000
2009-'12	PI	Nanoscale Resolution using CNT Scanning Thermal Probe	EPSRC (EP/G015570/1)	£356,000
2009-'12	CI	Coupling of quantum dots to two-dimensional systems	EPSRC (EP/H006419/1)	£294,000

External funding – recent applications (2015-present)

Year	Role	Research project	Granting body, status (outcome)	Target/income
2018	PI	"Nanoscale thermal transport management"	EPSRC, in discussion with programme manager	£1.6M Lancaster (total £4.8M)
2018	PI	"Physical mechanisms of cryopreservation"	EPSRC/BBSRC remit checking	£800,000
2018	PI	"Nanothermal phenomena in 2D materials"	In preparation	£700,000
2017-18	PI	2D Thermoelectrics, PDRA Secondment	Academia dei Lincei, Italy, applied	6 mths RA salary
2016	PI	*MIST* – Materials imaging and nanospectrocopy tool	EPSRC, passed to full proposal interview stage, not successful. Platform for RS and EPSRC proposals.	£700,000 income