

Curriculum Vitae for Kathryn Grandfield, 2019

Associate Professor – Department of Materials Science and Engineering – McMaster University

(1) NAME: Kathryn Grandfield

(2) BUSINESS ADDRESS:

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 kgrandfield@mcmaster.ca, www.kgrandfield.mcmaster.ca

(3) EDUCATIONAL BACKGROUND:

- | | |
|---|------|
| Post-Doctoral Research Scholar , Department of Preventative and Restorative Dental Science, Biomaterials and Bioengineering, University of California, San Francisco, CA
Supervisor: Sunita P. Ho | 2013 |
| Doctorate (Ph.D.) ; Uppsala University, Department of Engineering Sciences, Applied Materials Science, Uppsala, Sweden
Supervisors: Håkan Engqvist and Peter Thomsen | 2012 |
| Master's of Applied Science (M.A.Sc.) ; McMaster University, Department of Materials Science and Engineering, Hamilton, ON
Supervisor: Gianluigi Botton | 2010 |
| Bachelor of Engineering (B.Eng.) ; McMaster University, Department of Materials Science and Engineering, Hamilton, ON | 2008 |

(4) CURRENT STATUS AT MCMASTER:

Associate Professor in the Department of Materials Science and Engineering
Associate Member: School of Biomedical Engineering
Status: Tenured, July 1, 2019 *First Appointment*: October 1, 2013

(5) PROFESSIONAL ORGANIZATIONS:

- Professional Engineers of Ontario (PEO), **Engineer in Training**, 2013 – present
- Microscopical Society of Canada (MSC), **Vice-President** (elected), 2008 – present
- Canadian Biomaterials Society (CBS), **Member**, 2013 – present
- Academy of Osseointegration (AO), **Member**, 2014 – present

(6) EMPLOYMENT HISTORY:

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|---|----------------|
| Associate Professor , Department of Materials Science and Engineering, McMaster University, Hamilton, Ontario | 2019 – present |
| Assistant Professor , Department of Materials Science and Engineering, McMaster University, Hamilton, Ontario | 2013 – 2019 |
| Post-Doctoral Research Scholar , Department of Preventative and Restorative Dental Science, Biomaterials and Bioengineering, University of California, San Francisco, CA | 2012 – 2013 |
| Visiting Researcher , Department of Physics, EMAT, University of Antwerp, Antwerp, Belgium | 2012 |

(7) SCHOLARLY AND PROFESSIONAL ACTIVITIES:

(c) Executive Positions:

- Canadian Biomaterials Society (CBS)
Secretary to the Board of Directors, 08/2013 – 06/2016
Senior Board Member (elected), 06/2016 – 06/2018
- Microscopical Society of Canada (MSC)
Vice-President (elected), 05/2019 – present
Second Vice-President (elected), 05/2017 – 05/2019
Councilor-at-large (elected), 08/2014 – 05/2017
- Canadian Centre for Electron Microscopy (CCEM)
Director of User Operations, 10/2015 – 08/2019

(d) Journal Referee (approx. # per year):

- | | |
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| • Nature (1) | • Frontiers in Bioengineering (1) |
| • Colloids and Interfaces (1) | • Micron (1) |
| • Journal of the Royal Society Interface (2) | • Metals (1) |
| • Surface and Coatings Technology (2) | • Science Advances (1) |
| • ACS Applied Materials and Interfaces (1) | • Advanced Functional Materials (1) |
| • ACS Applied Nano Materials (1) | • Archives of Oral Biology (1) |
| • Abstract reviews: World Biomaterials
Congress 2016 (20 reviews) | • Abstract reviews: CBS Meeting 2018 and
2019 (10), ICCBMT Meeting 2019 (12) |

(e) External Grant Reviews:

- NSERC CUI2I Grant Program (1 application)
- Canadian Cancer Society Research Innovation Grant (1 application)
- Canadian Foundation for Innovation – John Evans Leaders Opportunity Fund (2 application)
- Netherlands Organisation for Scientific Research (NWO) - Domain of Applied and Engineering Sciences (1 application)
- Frontier Research in Chemistry (FRC) Foundation – University of Strasbourg (2 applications)

(8) AREAS OF INTEREST:

Research:

- Biomaterials development and surface modification
- Multiscale microscopy and tomography of materials and interfaces
- Atom probe tomography of biominerals
- Biomineralization mechanisms in hard tissues
- Osseointegrated implants

Teaching:

- Introduction to Materials Science and Engineering
- Introduction to Biomedical Engineering
- Bone Structure and Function
- Biomaterials and Tissue Engineering

(9) HONOURS:

At McMaster:

- Faculty of Engineering Teaching Excellence Award (2019)
- Faculty of Engineering Large Section Dean's Teaching Honour Roll (2019)
- Early Researcher Award – Ontario Research Fund (2018–2023)
- Petro Canada – McMaster University Young Innovator Award (2017)
- Dean's Teaching Honour Roll, McMaster University (2016, 2017)

Prior to McMaster:

- European Biomaterials and Tissue Engineering Doctoral Award, European Society for Biomaterials (2013)
- NSERC Alexander Graham Bell Canada Graduate Scholarship, Doctoral (2010–12)
- NSERC Michael Smith Foreign Study Supplement (2010)
- NSERC Alexander Graham Bell Canada Graduate Scholarship, Master's (2009)
- The George and Alice Rivett Ontario Graduate Scholarship (2008)

(10) COURSES TAUGHT:

(a) Undergraduate:

- Integrated Biomedical Engineering and Health Sciences 1P10, Health Solutions and Design Projects I (1st year course, Term I and II, 2017–2019)
2017/18: Co-Instructor for 123 students (Evaluation: 8.54)
2018/19: Co-Instructor for 138 students (Evaluation: 9.20)
- Materials 1M03, Materials Structure and Properties (1st year course, Term II, 2013–2019)
2013/14: Instructor for 180 students (Evaluation: 7.51)
2014/15: Instructor for 376 students (Evaluations: 8.74, 8.89), Course Coordinator
2015/16: Instructor for 346 students (Evaluations: 8.98, 9.00), Course Coordinator
2016/17: Instructor for 209 students (Evaluations: 9.06), Co-Course Coordinator
2018/19: Instructor for 974 students co-taught by 3 instructors (Evaluations: 8.77, 8.39, 8.68)

(b) Graduate:

- Materials 701/702: Graduate Seminar Course (Term I and Term II, 2016-2018)
2016/17: Instructor for 7 students (Evaluation: 10)
2017/18: Instructor for 13 students (Evaluation: 9.00)
- Materials 703/BME 708: Biomaterials and Tissue Engineering (Term II, 2016-2017)
2015/16: Instructor for 12 students (Evaluation: 9.4)
2016/17: Instructor for 13 students (Evaluation: 9.13)
- Materials 791#: Bone Structure and Formation (Term I, 2015)
2015/16: Instructor for 6 students (Evaluation: 9.67)
- Biomedical Engineering 701: Core I - Biomechanics (Term I, 2014)
2013/14: Instructor for 14 students (Evaluation: 9.3)

(d) Other:

- Guest Lecturer (1 lecture per course):

2013/14: Eng Phys 4Z03: Semiconductor Manufacturing Technology (Term II)
 2015/16: Materials 4FF3: Synthesis Applications & Impact of Nanomaterials (Term II)
 2015/16, 2016/17, and 2018/19: ChemBio 3BM3: Implanted Biomaterials (Term II)

(12) SUMMARY of SUPERVISORSHIPS:

All trainees (HQP) were trained at McMaster. Departments supervised in include:

MSE = Materials Science and Engineering, or

BME = School of Biomedical Engineering, or

iBiomed = Integrated Biomedical Engineering and Health Sciences Undergraduate Program

<i>In Progress (n=10)</i>	<i>Completed (n=24)</i>	<i>Total (n=34)</i>
a) Masters: 1	a) Masters: 6	a) Masters: 7
b) Doctoral: 5	b) Doctoral: 2	b) Doctoral: 7
c) PDF: 0	c) PDF: 2	c) PDF: 2
d) Undergraduate: 4	d) Undergraduate: 13	d) Undergraduate: 17
e) High School: 0	e) High School: 1	e) High School: 1

(13) LIFETIME RESEARCH FUNDING:

Total Funding Awarded in Last 5 Years as Principal Applicant: \$ 3,504,462

Total Funding Awarded in Last 5 Years as Co-Applicant: \$ 3,910,000

(14) LIFETIME PUBLICATIONS:

*(Name appears in sequence as in publication, * denotes students supervised, role in collaboration and corresponding authorship is noted where applicable, IF denotes impact factor)*

(a) Peer Reviewed

(iii) Journal Articles:

1. *Lee, B.E.J., Shahin-Shamsabadi, A., Wong, M., Raha, S., Selvaganapathy, P.R. Grandfield, K. (2019) A Bioprinted in vitro Model for Osteoblast to Osteocyte Transformation by Changing Mechanical Properties of the ECM. *Advanced Biosystems*. Online August 21, 2019. <https://doi.org/10.1002/adbi.201900126>
2. *Marins, N., *Lee, B.E.J., Silva, R., *Raghavan, A., Carreno, N., Grandfield, K. (2019) Niobium pentoxide and hydroxyapatite particle loaded electrospun polycaprolactone/gelatin membranes for bone tissue engineering. *Colloids and Surfaces B: Biointerfaces*. 182, 110386. <https://doi.org/10.1016/j.colsurfb.2019.110386>
3. *Lee, B.E.J., Luo, L., Grandfield, K., Andrei, C., Schwarcz, H.P. (2019) Identification of collagen fibrils in cross sections of bone by electron energy loss spectroscopy. *Micron*. 124, 102706. <https://doi.org/10.1016/j.micron.2019.102706>

4. Finamore TA, Curtis TE, *Tedesco JV, Grandfield K, Roeder RK. (2019) Nondestructive, longitudinal measurement of collagen scaffold degradation using computed tomography and gold nanoparticles. *Nanoscale*, 11 (10):4345-4354. doi: 10.1039/c9nr00313d.
5. *Binkley, D, *Lee, B.E.J. Saem, S, Moran-Mirabal, J. (2019) Grandfield, K. Fabrication of polycaprolactone electrospun nanofibers doped with silver nanoparticles formed by air plasma treatment. *Nanotechnology*, 30: 215101 . <https://doi.org/10.1088/1361-6528/ab0444>
6. *Osorio, D.A., *Lee, B.E.J, Kwiecien, J.M., *Wang, X., *Shahid, I., *Hurley, A.L., Cranston, E.D., Grandfield, K. (2019) Cross-linked Cellulose Nanocrystal Aerogels as Viable Bone Tissue Scaffolds. *Acta Biomaterialia*, 87 (15): 152-165. <https://doi.org/10.1016/j.actbio.2019.01.049>
7. Clifford, A., *Lee, B.E.J, Grandfield, K., Zhitomirsky, I. (2019) Biomimetic modification of poly-L-lysine and electrodeposition of nanocomposite coatings for orthopaedic applications *Colloids and Surfaces B: Biointerfaces*, 176:115-121. <https://doi.org/10.1016/j.colsurfb.2018.12.049>
8. Hitchcock, A.P. *Wang, X., Grandfield, K., Everett, J., Collingwood, J.F., Telling, N.D. (2019) Correlative Spectromicroscopy and Tomography for Biomedical Applications involving Electron, Ion, and Soft X-ray Microscopies. *Microscopy Today*, 27(2):12-19. <https://doi.org/10.1017/S1551929518001256> [Cover article.]
9. *Wang, X., Yang, J., Andrei, C.M., Soleymani, L., Grandfield, K. (2018) Biomineralization of calcium phosphate revealed by in situ liquid-phase electron microscopy. *Nature Communications Chemistry*, 1 (80): 10.1038/s42004-018-008.
10. Grandfield, K., *Vuong, V., Schwarcz, H.P. Ultrastructure of Bone: Hierarchical Features from Nanometer to Micrometer Scale Revealed in Focused Ion Beam Sections in the TEM. (2018) *Calcified Tissue International*. 103(6):606-616. <https://doi.org/10.1007/s00223-018-0454-9>
11. *Wang, X. Y., Langelier, B., Shah, F.A., Korinek, A., Bugnet, M., Hitchcock, A.P., Palmquist, A., Grandfield, K. (2018) Biomineralization at Titanium Revealed by Correlative 4D Tomographic and Spectroscopic Methods. *Advanced Materials Interfaces (IF: 4.279)*, 1800262. <https://doi.org/10.1002/admi.201800262>
12. *Osorio, D.A., Seifried, B., Moquin, P., Grandfield, K., Cranston, E.D. (2018). Morphology of Cross-linked Cellulose Nanocrystal Aerogels: Cryo-templating vs. Pressurized Gas Expansion Processing. *Journal of Materials Science (IF: 2.599)*. 53(13):9842-9860.
13. *Lee, B.E.J., Exir, H., Weck, A., Grandfield, K (2018). Characterization and Evaluation of Femtosecond Laser-Induced Sub-micron Periodic Structures Generated on Titanium to Improve Osseointegration of Implants. *Applied Surface Science (IF: 3.387)*. 441: 1034-1042.
14. *Binkley, D.M., and Grandfield, K. (2017) Advances in Multiscale Characterization of Bone and Biomaterials Interfaces. *ACS Biomaterials Science & Engineering (IF: 3.234)*, Article ASAP. <http://doi.org/10.1021/acsbiomaterials.7b00420>
15. *Tedesco, J., *Lee, B.E.J., *Lin, A. Y-W., *Binkley, D.M., Delaney, K.H., Kwiecien, J.M. and Grandfield, K. (2017) Osseointegration of a 3D printed stemmed titanium dental implant: A pilot

- study. *International Journal of Dentistry*, ID 5920714. <https://doi.org/10.1155/2017/5920714>
16. Shah, F.A., *Lee, B.E.J., *Tedesco, J., Wexell, C.L., Persson, C., Thomsen, P., Grandfield, K., and Palmquist, A. (2017) Micrometer-Sized Magnesium Whitlockite Crystals in Micropetrosis of Bisphosphonate-Exposed Human Alveolar Bone. *Nano Letters (IF: 12.712)*, 17 (10), 6210-6216.
 17. Skjöldebrand, C., Schmidt, S., *Vuong, V., Pettersson, M., Grandfield, K., Högberg, H., Engqvist, H., Persson, C. (2017) Influence of Substrate Heating and Nitrogen Flow on the Composition, Morphological and Mechanical Properties of SiNx Coatings Aimed for Joint Replacements. *Materials (IF: 2.728)*, 10(2), 173.
 18. Langelier, B., *Wang, X., Grandfield, K. (2017) Atomic scale chemical tomography of human bone. *Nature Scientific Reports (IF: 4.259)*, 7, 39958. <http://doi.org/10.1038/srep39958>
 19. *Wang, X., Shah, F.A., Palmquist, A., Grandfield, K. (2016) 3D characterization of human nano-osseointegration by on-axis electron tomography without the missing wedge. *ACS Biomaterials Science & Engineering (IF: 3.234)*, 3(1), 49-55.
 20. *Lee, B.E.J., Ho, S.*, Mestres, G., Karlsson Ott, M., Koshy, P., Grandfield, K. (2016) Dual-topography electrical discharge machining of titanium to improve biocompatibility. *Surface and Coatings Technology (IF: 2.589)*, 296, 149-156.
 21. Fu, L., Wu, C., Grandfield, K., Unosson, E., Chang, J., Engqvist, H., Xia, W. (2016) Transparent single crystalline ZrO₂-SiO₂ glass nanoceramic sintered by SPS. *Journal of the European Ceramic Society (IF: 3.411)*, 36(14), 3487-3494.
 22. Chen, S., Grandfield, K., Shun, Y., Engqvist, H., Xia, W. (2016) Synthesis of calcium phosphate crystals with thin nacreous structure. *CrytEngComm (IF: 3.474)*, 18, 1064-1069.
 23. Kurylo, M.P., Grandfield, K., Aloni, S., Altoe, V., Marshall, G.W., Young, M., Ho, SP. (2016) Effect of proteoglycans at interfaces as related to location, architecture, and mechanical cues. *Archives of Oral Biology (IF: 1.549)*, 63, 82-92.
 24. Cai, Y., Chen, S., Grandfield, K., Engqvist, H., Xia, W. (2015) Fabrication of translucent nanoceramics via a simple filtration method. *RSC Advances (IF: 3.108)*, 5 (121), 99848-99855.
 25. *Vuong, V., Pettersson, M., Persson, C., Larsson, S., Grandfield, K., Engqvist, H. (2015) Surface and Subsurface Analyses of Metal-on-Polyethylene Total Hip Replacement Retrievals. *Annals of Biomedical Engineering (IF: 3.221)*, 1-13.
 26. Grandfield, K., Herber, R.P., Chen, L., Djomehri, S., Tam, T., Lee, J.H., Brown, E., Woolwine III, W.R., Curtis, D., Ryder, M., Schuck, P.J., Webb, S., Landis, W., Ho, S.P. (2015) Strain-guided mineralization in the bone-PDL-cementum complex of a rat periodontium, *Bone Reports*, 3, 20-31.
 27. Grandfield, K. (2015) Bone, implants and their interfaces. *Physics Today (IF: 4.188)*, 68(4).
[Invited feature article and cover article.]

28. Shah, F., *Wang, X., Thomsen, P., Grandfield, K., Palmquist, A. (2015) High-resolution visualisation of the osteocyte lacuno-canalicular network juxtaposed to the surface of nanotextured titanium implants in human. *ACS Biomaterials Science and Engineering (IF: 3.234)*. 1(5), 305-313.
29. Thorfve, A., Palmquist, A., & Grandfield, K. (2014) Three-Dimensional Techniques for Evaluation of Osseointegrated Titanium Implants. *Materials Science and Technology*, 31(2), 174-179. **[Invited article]**
30. Dendooven, J., Devloo-Casier, K., Ide, M., Grandfield, K., Kurttepel, M., Ludwig, K.F., Bals, S., Van Der Voort, P., and Detavernier, C. (2014) Atomic layer deposition-based tuning of the pore size in mesoporous thin films studied by in situ grazing incidence small angle x-ray scattering. *Nanoscale*, 6(24):14991-8.
31. Grandfield, K., Chattah, N.L., Djomehri, S., Eidelman, N., Eichmiller, F.C., Schuck, P.J., Nweeia, M.T., & Ho, S.P. (2014) The narwhal (*Monodon monoceros*) cementum-dentin junction (CDJ): A functionally graded biointerphase. *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine*, 228(8):754-67.
32. Grandfield, K., & Engqvist, H. (2014) Characteriation of Dental Interfaces with Electron Tomography. *Biointerphases*, 9, 029001 **[Cover article.]**
33. Ho, S.P., Kurylo, M.P., Grandfield, K., Hurng, J., Herber, R.-P., Ryder, M.I., Altoe, V., Aloni, S., Feng, J., & Webb, S. (2013) The plastic nature of the human bone-periodontal ligament-tooth fibrous joint. *Bone*, 57(2):455-467. **[Cover article.]**
34. Forsgren, J., Frykstrand, S., Grandfield, K., Mihranyan, A., & Strømme, M. (2013). A Template-Free, Ultra-Adsorbing, High Surface Area Carbonate Nanostructure. *PLoS ONE*, 8(7), e68486.
35. Grandfield, K., Gustafsson, S., & Palmquist, A. (2013). Where bone meets implant: the characterization of nano-osseointegration. *Nanoscale*, 5(10), 4302-4308.
36. Grandfield, K., Pujari, S., Ott, M., Engqvist, H., & Xia, W. (2013). Effect of Calcium and Strontium on Mesoporous Titania Coatings for Implant Applications. *Journal of Biomaterials and Nanobiotechnology*, 04(02), 107–113.
37. Grandfield, K., Palmquist, A., & Engqvist, H. (2013). Three-dimensional structure of laser-modified Ti6Al4V and bone interface revealed with STEM tomography. *Ultramicroscopy*, 127, 48–52.
38. Grandfield, K., Palmquist, A., & Engqvist, H. (2012). High-resolution three-dimensional probes of biomaterials and their interfaces. *Philosophical Transactions of the Royal Society A-Mathematical Physical and Engineering Sciences*, 370(1963), 1337–1351.
39. Grandfield, K., Palmquist, A., Engqvist, H., Thomsen, P. Resolving the CaP-bone interface: A review of discoveries with light and electron microscopy. (2012) *Biomatter*, 2(1), 15-23.
40. Grandfield, K., & Engqvist, H. (2012). Focused Ion Beam in the Study of Biomaterials and Biological Matter. *Advances in Materials Science and Engineering*, 2012, 1–6.

41. Olofsson, J., Pettersson, M., Teuscher, N., Heilmann, A., Larsson, K., Grandfield, K., et al. (2012). Fabrication and evaluation of Si(x)N (y) coatings for total joint replacements. *Journal of Materials Science: Materials in Medicine*, 23(8), 1879–1889.
42. Palmquist, A., Grandfield, K., Norlindh, B., Mattsson, T., Brånemark, R., & Thomsen, P. (2012). Bone-titanium oxide interface in humans revealed by transmission electron microscopy and electron tomography. *Journal of The Royal Society Interface*, 9, 396–400.
43. Xia, W., Grandfield, K., Hoess, A., Ballo, A., Cai, Y., & Engqvist, H. (2012). Mesoporous titanium dioxide coating for metallic implants. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 100(1), 82–93.
44. Grandfield, K., Ericson, F., & Sandén, B. (2012). Ultrastructural characterisation of the hydroxyapatite-coated pedicle screw and human bone interface. *International Journal of Nano and Biomaterials*, 4(1), 1–11.
45. Grandfield, K., Palmquist, A., Ericson, F., Malmström, J., Emanuelsson, L., Slotte, C., et al. (2012). Bone Response to Free-Form Fabricated Hydroxyapatite and Zirconia Scaffolds: A Transmission Electron Microscopy Study in the Human Maxilla. *Clinical Implant Dentistry and Related Research*, 14(3), 461–469.
46. Xia, W., Grandfield, K., Schwenke, A., & Engqvist, H. (2011). Synthesis and release of trace elements from hollow and porous hydroxyapatite spheres. *Nanotechnology*, 22(30), 305610.
47. Grandfield, K., Palmquist, A., Gonçalves, S., Taylor, A., Taylor, M., Emanuelsson, L., et al. (2011). Free form fabricated features on CoCr implants with and without hydroxyapatite coating in vivo: a comparative study of bone contact and bone growth induction. *Journal of Materials Science: Materials in Medicine*, 22(4), 899–906.
48. Grandfield, K., McNally, E. A., Palmquist, A., Botton, G. A., Thomsen, P., & Engqvist, H. (2010). Visualizing biointerfaces in three dimensions: electron tomography of the bone-hydroxyapatite interface. *Journal of The Royal Society Interface*, 7(51), 1497–1501. **[Cover article.]**
49. Grandfield, K., Sun, F., FitzPatrick, M., Cheong, M., & Zhitomirsky, I. (2009). Electrophoretic deposition of polymer-carbon nanotube–hydroxyapatite composites. *Surface & Coatings Technology*, 203(10-11), 1481–1487.
50. Grandfield, K., & Zhitomirsky, I. (2008). Electrophoretic deposition of composite hydroxyapatite–silica–chitosan coatings. *Materials Characterization*, 59(1), 61–67.

(vi) Proceedings of Meetings (Published Abstracts or Papers)

1. Monkman, S., Grandfield, K., Langelier, B. (2018) On the Mechanism of Using Carbon Dioxide as a Beneficial Concrete Admixture. *12th International Conference on Superplasticizers and Other Chemical Admixtures in Concrete*. Beijing, China. October 28-21, 2018.

2. Hitchcock, A.P., *Wang, X., Grandfield, K. (2018) Correlative Spectromicroscopy and Tomography Involving Soft X-ray Methods. *Microscopy & Microanalysis*, 24 (S1): 364-365.
3. *Wang, X., Yang, J., Andrei, C., Soleymani, L., Grandfield, K. (2016) Biomineralization of Hydroxyapatite Revealed by in situ Electron Microscopy. *Microscopy and Microanalysis* 22, 746.
4. *Wang, X., Langelier, B., Palmquist, A., Grandfield, K. (2015) Biomineralization at Interfaces Revealed with 4D Electron and Atom Probe Tomographies. *Microscopy & Microanalysis* 21, 83.
5. Palmquist, A., Grandfield, K. (2014) From Micro to Nano: Correlative 3D Microscopies for Analysis of Biointerfaces. *Microscopy and Microanalysis* 20 (S3), 962-963.
6. Huang, J., *Wang, X., Grandfield, K. (2014) FIB Preparation of Bone-Implant Interfaces for Correlative On-Axis Rotation Electron Tomography and Atom Probe Tomography. *Microscopy & Microanalysis* 20, 352-353.

(b) Not Peer Reviewed

(ii) Contributions to Books:

1. Shah, F.A., Grandfield, K., Palmquist, A. (2016) Chapter 13: Laser surface modification and the tissue-implant interface. In: Laser surface modification of biomaterials: techniques and applications. Editor: Rui Vilar Elsevier, Woodhead Publishing. ISBN: 978-0-08-100883-6
2. Grandfield, K. (2017) Chapter 11: Advanced Analyses for Characterizing Bone Repair and Osseointegration. In: Volume 3: Design of bioactive materials for bone repair and regeneration. The World Scientific Encyclopedia of Nanomedicine and Bioengineering II: pp. 343-354. https://doi.org/10.1142/9789813202573_0011
3. *Lee, B.E.J., Grandfield, K. (2017) The Biomaterials Handbook, Chapter 4.4.1.2. Cytotoxicity. Publisher: Wiley. **[Invited book chapter submission.]**

(iv) Journal Artistic Contributions:

1. Grandfield, K. (2014) Where bone meets implant. *Physics Today- Backscatter Image* 67, 11, 96. <https://doi.org/10.1063/PT.3.2597>

(d) Submitted for Publication

1. *Lee, B.E.J., Exir, H., Weck, A., Grandfield, K. (2019) Capturing Living Mammalian Cell Migration with Ionic Liquids in Low-Vacuum SEM. *Ultramicroscopy*. Major revisions received May 19, 2019. (ULTRAM_2019_28)
2. *Deering, J., *Micheletti, C., *Lee, B.E.J., *Binkley, D.M., Coulson, S., *Hussain, A., Zurob, H., Grandfield, K. (2019) Electrochemical Anodization of 3D-Printed Titanium Alloys for Bone Implants with Dual-Scale Topography: Ti-5Al-5Mo-5V-3Cr and Ti-6Al-4V. *Additive Manufacturing*. Submitted June 4, 2019. (ADDMA_2019_662)

3. Imani, S., MacLachlan, R., Rachwalski, K., Chan, Y., *Lee, B.E.J., McInnes, M., Grandfield, K., Brown, E., Didar, T., Soleymani, L. Flexible Hierarchical Wraps Repel Drug Resistant Gram Negative and Positive Bacteria. *ACS Nano*. Submitted August 9, 2019 (nn-2019-06287r)

(15) PRESENTATIONS AT MEETINGS:

(a) Invited Presentations

(Note: Unless otherwise noted, Grandfield delivered all invited talks.)

Invited Conference Presentations:

1. “Beyond Radiographs: Probing Nanoscale Osseointegration in 4D” *Annual Meeting of the International Association for Dental Research (IADR). Academy of Osseointegration Symposium*. June 20, 2019. Vancouver, BC Canada.
2. “New strategies for characterizing biomaterials with advanced X-ray, electron, ion, and atom probe microscopes.” *35th Annual Meeting of the Canadian Biomaterials Society*. May 24, 2019. Quebec City, QC Canada.
3. “Atom probe tomography and correlative microscopy for biological materials” *The International Field Emission Symposium on Atom Probe Tomography and Microscopy, APT&M 2018*. June 10-15, 2018. National Institute of Standards and Technology (NIST), Gaithersburg, Maryland, USA
4. “Correlative Imaging for Bone and Bone-Implant Interfaces” *Gordon Research Conference on Biomineralization*. July 29 - August 3, 2018. Colby Sawyer College, New London, New Hampshire, USA.
5. “Atom Probe Tomography of Biominerals” *International Microscopy Conference, IMC2019*. September 9-14, 2018. Sydney, Australia.
6. “Characterizing Nano-Biomaterials Interfaces: Correlative Microscopies for Bone Applications”, *NanoOntario Conference*. November 10, 2017. Toronto, ON Canada.
7. “Correlative Atom Probe and EELS Tomography of Bone Interfaces”, *European Atom Probe Tomography Workshop*. October 3, 2017. Gullmarstrand, Sweden.
8. “Tailoring Biomaterials for Osseointegration” *Canadian Materials Science Conference*. June 23, 2017. Ottawa, ON Canada.
9. “From 3D to 4D: Correlative Microscopies of Bone Interfaces” *Microscopy Characterization at Organic-Inorganic Interfaces* hosted by *Royal Microscopy Society*. February 23, 2017. London, UK.
10. “New Approaches in High-Resolution 3D Imaging of Biointerfaces” *Brazilian Materials Research Society*. September 28, 2015. Rio de Janeiro, Brazil.
11. “Multi-length Scale Microscopies of Biomaterial Interfaces” *International Materials Research Congress*. August 18, 2015. Cancun, Mexico.
12. “Correlative APT of Human Bone and Bone-Titanium Interfaces” *Atom Probe Tomography User’s Meeting*. June 11, 2015. Madison, WI USA.

13. “From Micro to Nano: Correlative 3D Microscopies for Analysis of Biointerfaces” *Microscopy and Microanalysis*. August 4, 2014. Hartford, CT USA.
14. “Characterization of Dental Interfaces with Electron Tomography”, (presented in my absence by H. Engqvist). *4th International Symposium on Surface and Interface of Biomaterials*. September 26, 2013. Rome, Italy.

Invited University/Research Institute Presentations:

15. “From micro-nano to macro-nano: combining TEM and synchrotron scanning-SAXS for bone mineral analysis” presented with A. Gourrier. *CNRS-McMaster Workshop*. July 14-17, 2019. Grenoble, France.
16. “Correlative Multidimensional Imaging of Bone and Biomaterials with Electron and Atom Probe Tomography” *Cornell University, Materials Engineering Seminar Series*. April 18, 2019. Ithaca, NY USA.
17. “How to Use Social Media” *Faculty Development Academy, McMaster University* December 7, 2018. Hamilton, ON Canada.
18. “Customizing Biomaterials for Bone-Implant Applications” November 7, 2018. *MILO Innovation Showcase*. Hamilton, ON Canada.
19. “Designing and Characterizing New Biomaterials for Orthopaedics and Dentistry” March 27, 2018. *BEAMS Lecture*. Hamilton, ON Canada.
20. “Correlative Microscopy Approaches for Investigating Biomaterials” *CNRS-McMaster Joint Workshop* February 6, 2018. Hamilton, ON Canada.
21. “Correlative Microscopies for Investigating Bone and Biomaterials Interfaces” *The University of Toronto, Materials Science and Engineering Distinguished Lecturer Series*. November 20, 2017. Toronto, ON.
22. “What I Learned through International Materials Research” *Ursula Franklin Women in Materials Science and Engineering Lecture Series*. November 20, 2017. Toronto, ON.
23. “Correlative, 3D and in situ Microscopies for Understanding Biomineralization, Bone and Osseointegration” *Materials Sciences Seminar at Pacific Northwest National Laboratory*. February 6, 2017. Richland, WA, USA.
24. “From 3D to 4D: Correlative Microscopies of Biointerfaces” *Seminar Series, Institut national des sciences appliquées – INSA Lyon. MATEIS Laboratory*. April 6, 2016. Lyon, France.
25. “Linking Diversity and Development: Applications in Bone Implants” *McMaster Global Engineering Conference*. March 12, 2016. Hamilton, ON Canada.
26. “Introduction to electron tomography” and “Applications of electron tomography in biointerfaces” Guest lecturer and laboratory demonstrator, *20th Anniversary Morphological Sciences Graduation Program, Institute of Biomedical Sciences, Federal University Rio de Janeiro (UFRJ)*. September 30-October 6, 2015. Rio de Janeiro, Brazil.
27. “A Closer Look at Implant Materials: 3D Electron and Atom Probe Tomography of Bone-Interfacing Biomaterials” *Department of Mechanical Engineering Seminar Series, University of Ottawa*. June 23, 2015. Ottawa, ON Canada.

28. "Taking a Closer Look at Biomaterials" *McMaster Engineering, Café E-Xpress Morning Lecture Series*. February 3, 2015. McMaster Innovation Park, Hamilton, ON Canada.
29. "Biomaterials: Where are we now and where are we heading?" *ASM Ontario Chapter Meeting*. January 14, 2015. Oakville, ON Canada.
30. "A Closer Look at Implant Materials: 3D Electron and Atom Probe Tomography of Bone-Interfacing Biomaterials" *BIMR lecture series*. September 29, 2014. Hamilton.
31. "3D Electron Microscopy: Basics and Applications to Biointerfaces" *Western University, Dept Physics*. March 20, 2014. London, ON Canada.
32. "The Structure of Bone-Biomaterial Interfaces in 3D" *University of Toronto, Bone Interfaces Group*. March 14, 2014. Toronto, ON Canada.
33. "Structure of Biointerfaces in 3D" *CCEM 5yr Anniversary*. January 31, 2014. Hamilton, ON Canada.
34. "FIB-SEM and 3D Electron Microscopy of Biointerfaces" *McGill University, Dept Anatomy and Cell Biology*. January 22, 2014. Montreal, ON Canada.
35. "Electron Tomography: Microscopy in Three Dimensions", *CanmetMATERIALS Laboratory*, October 2, 2013. Hamilton, ON Canada.
36. "STEM Tomography of Biomaterial Interfaces: How Electron Tomography Leads to Better Implants" *National Center for Electron Microscopy at Lawrence Berkeley National Lab*. July 18, 2013. Berkeley, CA.
37. "The Bone-Biomaterial Interface: Understanding it in 3D with Electron Tomography" *EMAT: Electron Microscopy for Materials Science Group at the University of Antwerp*. April 13, 2012. Antwerp, Belgium.

(b) Contributed Presentations (*Name appears in sequence as in abstract, the presenter is underlined, *denotes students supervised, oral or poster presentations are specified*)

(i) Peer Reviewed

1. *Binkley, D.M., Yuan, H., Grandfield, K. Exploration of plasma focused ion beam (PFIB) tomography as a tool to understand the hierarchical structure of human bone. *International Conferences on the Chemistry and Biology of Mineralized Tissues (ICCBMT)*. Accepted for October 21, 2019. Montebello, QC Canada (Oral) ***Travel Award Winner (1000USD)**
2. *Lee, B.E.J., Langelier, B., Grandfield, K. Visualization of in vivo mineralization using atom probe tomography. *International Conferences on the Chemistry and Biology of Mineralized Tissues (ICCBMT)*. Accepted for October 20, 2019. Montebello, QC Canada (Oral) ***Travel Award Winner (1000USD)**
3. Palmquist, A., Ruscsák, K., Liebi, M., Grandfield, K., Shah, F.A. The hierarchical nature of osseointegration: multiscale and multimodal assessment of the bone-implant interface. *14th Congress of the International Society of Bone Morphometry*. Accepted for September 23-26, 2019. Lake Buena Vista, FL USA. (Oral)
4. *Deering, J., Clifford, A., *Lee, B.E.J., Zhitomirsky, I., Grandfield, K. Investigating osteoblast response to electrophoretically deposited coatings on additively manufactured lattices. *35th*

- Annual Meeting of the Canadian Biomaterials Society*. May 24, 2019. Quebec City, QC Canada. (Oral)
5. *Lee, B.E.J., Exir, H., Weck, A., Grandfield, K. Imaging Living Mammalian Cell Migration with Ionic Liquids using Low-Vacuum SEM. *35th Annual Meeting of the Canadian Biomaterials Society*. May 24, 2019. Quebec City, QC Canada. (Poster) ***Travel Award Winner (\$1000)**
 6. Clifford, A., *Lee, B.E.J., Grandfield, K., Zhitomirsky, I. Electrophoretic deposition of bioactive catechol-modified poly-l-lysine nanocomposite films for orthopaedic coating applications. *35th Annual Meeting of the Canadian Biomaterials Society*. May 24, 2019. Quebec City, QC Canada. (Poster)
 7. Finamore, T.A., Curtis, T.E., *Tedesco, J.V., Grandfield, K., and Roeder, R.K. Non-Invasive, Longitudinal Measurement of Collagen Scaffold Degradation Using Computed Tomography and Gold Nanoparticles. *Society for Biomaterials 2018*. (Oral)
 8. Natasha Larocque (Department of Radiology), Colin McDonald (Department of Mechanical Engineering), Kathryn Grandfield (Department of Materials Science and Engineering), Christie Condon (Department of Computing and Software), Hubert DeBruin (Department of Electrical and Computer Engineering), Michelle Parolin-MacDonald (Department of Biochemistry and Biomedical Sciences), David Landry (Department of Radiology), David Koff (Department of Radiology). Collaboration between Radiology and Biomedical Engineering educational programs: Integration of experiential teaching and learning in a first year Biomedical Engineering classroom. *Medical imaging informatics and teleradiology conference*. May 10, 2019. Hamilton, ON Canada. (Oral)
 9. *Osorio, D.A., *Lee, B.E.J., *Shahid, I., Cranston, E.D., and Grandfield, K. Chemically Cross-Linked Cellulose Nanocrystal Aerogels as Bone Tissue Scaffolds. *Canadian Society of Chemical Engineers*. October 28, 2018. Toronto, ON Canada. (Oral)
 10. *Lee, B.E.J., Exir, H., Weck, A., Grandfield, K. Laser Induced Periodicity to Improve Osseointegration. *Canadian Biomaterials Society 34th Annual Meeting*. May 19, 2018. Victoria, BC Canada. (Oral) ***Lee awarded Canadian Biomaterials Travel Award**
 11. *Micheletti, C., *Lee, B.E.J., Coulson, S., Zurob, H., Grandfield, K. Surface modification of 3D-printed Ti alloys to improve osseointegration. *Canadian Biomaterials Society 34th Annual Meeting*. May 19, 2018. Victoria, BC Canada. (Poster)
 12. *Marins, N.H., Silva, R.M., *Lee, B.E.J., Carreño, N.L.V, Grandfield, K. Electrospun Polymer-Niobium Containing Composite Scaffolds for Bone Regeneration. *Canadian Biomaterials Society 34th Annual Meeting*. May 19, 2018. Victoria, BC Canada. (Poster)
 13. Finamore, T.A., Curtis, T.E., *Tedesco, J.V., Grandfield, K., and Roeder, R.K. Gold Nanoparticles as a New Diagnostic Tool to Measure Scaffold Degradation. *International Precious Metals Institute 41st Annual International Conference*, June 13, 2017. Orlando, FL USA. (Oral)

14. *Osorio, D.A., *Lee, B.E.J., Cranston, E.D., and Grandfield, K. Cross-Linked Cellulose Aerogels for Bone Scaffolding Applications. *TAPPI Nano Division: International Conference on Nanotechnology for Renewable Materials*. June 5-8, 2017. Montreal, ON Canada. (Oral)
15. Monkman, S., Grandfield, K., Dipple, G., Raki, L. Microscopic characterization to study the mechanism of beneficial CO₂ utilization in ready mixed concrete production. *39th International Cement Microscopy Association Conference*, April 9-13, 2017. Toronto, ON Canada. (Oral)
16. *Binkley, D., Lou, L., Grandfield, K., Schwarcz, H. Investigation of Gap Zone Mineral in Bovine Bone Using TEM. *Microscopy Characterization at Organic-Inorganic Interfaces* hosted by *Royal Microscopy Society*. February 23, 2017. London, UK. (Poster)
17. *Perrin, M., *Wang, X., Grandfield, K. Optimizing electron tomography of bone and bone/implant interfaces. *TMS 2017, 146th Annual Meeting and Exhibition*. February 26–March 2, 2017. San Diego, CA USA. (Poster)
18. Grandfield, K., *Vuong, V., Schwarcz, H. The ultrastructure of bone revealed in high-angle annular dark-field (HAADF) STEM microscopy. *Biomaterialization*. August 14, 2016. Girona, Spain. (Oral)
19. *Wang, X., Yang, J., Andrei, C., Soleymani, L., Grandfield, K. Biomaterialization of Hydroxyapatite Revealed by In Situ Electron Microscopy. *Microscopy & Microanalysis*. July 27, 2016. Columbus, OH USA. (Oral) ***Wang awarded M&M Student Award Winner**
20. Chakravarty, A.B., *Nguyen, P., Wohl, G.R., Grandfield, K., Quenneville, C.E. The effect of room temperature drying on the mechanical response of bone. *Canadian Biomechanics Society*. July 20, 2016. Hamilton, ON Canada. (Oral)
21. Grandfield, K. Correlative characterizations of modified titanium surfaces to improve osseointegration. *Canadian Materials Science Conference*. June 9, 2016. Hamilton, ON Canada. (Oral)
22. *Binkley, D., Boyle, J., Seam, K., *Lee, B.E.J., Moran-Mirabal, J., Grandfield, K. Fabrication of polycaprolactone electrospun nanofibers doped with silver nanoparticles. *Canadian Materials Science Conference*. June 9, 2016. Hamilton, ON Canada. (Poster)
23. *Wang, X., Langelier, B., Shah, F.A., Palmquist, A., Grandfield, K. Atomic-scale osseointegration in human revealed by atom probe tomography. *World Biomaterials Congress*. May 22, 2016. Montreal, QC Canada. (Oral)
24. *Lee, B.E.J., Exir, H., Weck, A., Grandfield, K. Modification and evaluation of periodic nanostructures on titanium generated by femtosecond laser for improving osseointegration. *World Biomaterials Congress*. May 22, 2016. Montreal, QC Canada. (Poster) ***Lee awarded Canadian Biomaterials Society Travel Award**
25. *Creighton, E.R., Liddell, R., Caines, D., Davies, J.E., Grandfield, K. Investigating mineralization in normal and hyperglycemic bone with electron microscopy. *World Biomaterials Congress*. May 22, 2016. Montreal, QC Canada. (Poster)

26. Shah, F., *Wang, X., Thomsen, P., Grandfield, K., Palmquist, A. bone-implant interface – Are osteocytes at the implant surface responsible for mechanical load transfer? *ESB 2015, 27th European Conference on Biomaterials*. August 30- September 3, 2015. Krakow, Poland. (Oral)
27. *Wang, X., Langelier, B., Palmquist, A., Grandfield, K. Biomineralization at Interfaces Revealed with 4D Electron and Atom Probe Tomographies. *Microscopy and Microanalysis*. August 3, 2015. Portland, OR USA (Poster)
28. Palmquist A, Shah FA, Grandfield K, Thomsen P. Bone-implant interface: morphology and ultrastructure, *13th Congress of the International Society of Bone Morphometry*. April 27-29, 2015. Tokyo, Japan.
29. *Wang, X., Langelier, B., Grandfield, K. 4D Nanoscale Tomographies of Bone-Implant Interfaces. *5th International Symposium of Surface and Interface of Biomaterials*. April 9, 2015. Sydney, Australia. (Oral)
30. *Wang, X., Langelier, B., Palmquist, A., Grandfield, K. Biomineralization at Interfaces Revealed with 4D Electron and Atom Probe Tomographies. *42nd Annual Meeting of the Microscopical Society of Canada*. May 27, 2015. Hamilton, ON Canada. (Oral)
31. *Vuong, V., Pettersson, M., Persson, C., Larsson, S., Engqvist, H., Grandfield, K. Surface and Subsurface Characterization of Metal-on-Polyethylene Total Hip Replacement Retrievals. *Canadian Biomaterials Society Annual Meeting*. May 27-30, 2015. Toronto, ON Canada. (Poster)
32. Huang, J., *Wang, X., Grandfield, K. FIB Preparation of Bone-Implant Interfaces for Correlative On-Axis Electron Tomography and Atom Probe Tomography. *Microscopy and Microanalysis*. August 4, 2014. Hartford, CT USA. (Poster)
33. *Vuong, V., Pettersson, M., Persson, C., Larsson, S., Engqvist, H., Grandfield, K. Characterization of Wear Surfaces on Metal-on-Polyethylene Hip Explants Using Electron Microscopy. *International Conference on Biotribology*. May 11-14, 2014. Toronto, ON. (Poster)
34. Grandfield, K., Gustafsson, S., & Palmquist, A. Nano-Osseointegration of Titanium Implants: Characterization by High-Resolution Electron Microscopies. *30th Annual Meeting of the Canadian Society for Biomaterials*. May 29-June 1, 2013. Ottawa, ON. (Oral)
35. Dendooven, J., Devloo-Casier, K., Ide, M., Grandfield, K., Ludwig, K.F., Van Der Voort, P., Bals, S., & Detavernier C. In Situ Characterization of ALD in Mesoporous Thin Films by Grazing Incidence Small Angle X-Ray Scattering. *12th International Conference on Atomic Layer Deposition*. June 17-20, 2012. Dresden, Germany. (Poster)
36. Grandfield, K., Palmquist, A., Thomsen, P., & Engqvist, H. Resolving the nanostructure of the Ti-bone interface in 3D using high-resolution electron tomography. *9th World Biomaterials Congress*. June 1-5, 2012. Chengdu, China. (Oral)
37. Grandfield, K., Pujari, S., Ott, M., Engqvist, H., & Xia, W. Mesoporous titania implant coatings with and without calcium and strontium ion incorporation. *Scandinavian Society for Biomaterials 5th Annual Meeting*. May 8-9, 2011. Uppsala, Sweden. (Oral)

38. Thersleff, T., Grandfield, K., Xia, W., Welch, K., & Engqvist, H. Structural characterization of mesoporous titania containing silver nanoparticle inclusions for antibacterial implant applications. *Scandinavian Society for Biomaterials 5th Annual Meeting*. May 8-9, 2011. Uppsala, Sweden. (Oral)
39. Grandfield, K., Palmquist, A., & Engqvist, H. Three-dimensional structure of laser-modified Ti6Al4V and bone interface revealed with STEM tomography. *Frontiers of Electron Microscopy in Materials Science*. September 18-23, 2011. Rohnert Park, CA. (Poster)
40. Grandfield, K., Palmquist, A., Botton, G.A., Thomsen, P., & Engqvist, H. Electron tomography: A tool for the study of osseointegration in 3D. *European Cells & Materials*. Suppl. 1, 2011;21:39. *Scandinavian Society for Biomaterials 4th Annual Meeting*. May 4-6, 2011. Fiskebäckskil, Sweden. (Poster)
41. Palmquist, A., Grandfield, K., Engqvist, H., & Thomsen, P. Osseointegration on the nano-level revealed by Focused Ion Beam (FIB) and Transmission electron microscopy (TEM) analysis. *SICOT/SIROT*. 31-3rd of September, 2010. Göteborg, Sweden. (Oral)
42. Palmquist, A., Grandfield, K., Emanuelsson, L., Mattson, T., Brånemark, R., & Thomsen P. Light and electron microscopy study of two BioHelix™ implants retrieved from one patient. *European Association for Osseointegration, 19th Annual Scientific Meeting*. 6-9th of October, 2010. Glasgow, United Kingdom. (Oral)
43. Grandfield, K., McNally, E.A., Palmquist, A., Botton, G.A., Thomsen, P., & Engqvist, H. Electron tomography: A tool for the study of osseointegration in 3D. *European Association for Osseointegration, 19th Annual Scientific Meeting*. October 6-9, 2010. Glasgow, United Kingdom. (Oral)
44. Grandfield, K., Palmquist, A., Malmström, J., Emanuelsson, L., Slotte, C., Adolfsson, E., Botton, G.A., Thomsen, P., & Engqvist, H. Bone regeneration in hydroxyapatite scaffolds: An in-vivo study in humans. *ESB, 22nd European Conference on Biomaterials*. September 7-11, 2009. Lausanne, Switzerland. (Poster)
45. Grandfield, K., Palmquist, A., Malmström, J., Engqvist, H., Thomsen, P., & Botton, G.A. Characterization of hydroxyapatite-bone interfaces using FIB and TEM. *Canadian Materials Science Conference*. June 9-11, 2009. Kingston, ON. (Oral)

(ii) Not Peer Reviewed

1. *Strakhov, I., Pritchard, J., Adachi, R., Papaioannou, A., DeBeer, J., H. Schwarcz, Grandfield, K. MIRA Research Day. October 26, 2018. Hamilton, ON Canada (Poster) * **Second place**
2. *Osorio, D.A., Seifried, B., Moquin, P., Grandfield, K., Cranston, E.D. Cellulose Aerogels for Bone Scaffolding Applications. McMaster University Chemical Engineering Conference. April 2017. Hamilton, ON Canada. (Poster) ***RSC poster winner in both Reaction Chemistry and Engineering / Molecular Systems Design and Engineering**

3. *Osorio, D.A., Seifried, B., Moquin, P., Grandfield, K., Cranston, E.D. Cellulose Aerogels for Bone Scaffolding Applications. *PolyMAC*, December 13, 2016. Hamilton, ON. (Oral)
4. *Osorio, D.A., Seifried, B., Moquin, P., Grandfield, K., Cranston, E.D. Cellulose Aerogels for Bone Scaffolding Applications. *NanoOntario 2016*, November 10-11, 2016. (Oral)
5. Du, J., Grandfield, K., Lin, J.D., Prevost, R., Fahey, K., Merkle, A., Curtis, D., & Ho, S.P. Biomechanics of Human Bone-PDL-Tooth Joints. *UCSF School of Dentistry Research and Clinical Excellence Day*. October 10, 2013. San Francisco, CA. (Poster)
6. Djomehri, S., Grandfield, K., Nweeia, M., Webb, S., & Ho, S.P. Elemental zinc as a marker for potential biomineralization. *UCSF School of Dentistry Research and Clinical Excellence Day*. October 10, 2013. San Francisco, CA. (Poster)

(17) ADMINISTRATIVE RESPONSIBILITIES:

Departmental:

- Biomaterials Specialization Committee, Materials Science and Engineering, **Chair** (2019)
- Public Relations Committee, Materials Science and Engineering, **Chair** (2017–2018)
- School of Biomedical Engineering Marketing Committee, **Member** (2016 – 2018)
- Hiring Committee (Biomaterials Position) Materials Science and Engineering, **Chair** (2017)
- Materials Science and Engineering Level 1 Recruitment Committee, **Member** (2015, 2017, 2019)
- Engineering Level 1 Operating Committee, **Member** (2015 – 2016)
- Hiring Committee (Micro-Nano Position), Materials Science and Engineering, **Member** (2015)

Faculty:

- Selection Committee, Associate Dean Academic, **Member** (2019)
- Hiring Committee, Bachelor of Technology, **Member** (2019)
- Search Committee, iBiomed Co-Directorship, **Member** (2017)
- Hiring Committee (Diversity Position), Mechanical Engineering, **Dean's Representative** (2017)
- Dean's Excellence Award Selection Committee, **Member** (2014)
- Women in Engineering Committee, **Member** (2013 – present)

University:

- Director of User Operations, Canadian Centre for Electron Microscopy (2015–present)
- McMaster University Animal Research Ethics Board (AREB), **Member** (2016 – present)
- Women in Science and Engineering (WISE), **Mentor** (2013 – present)
- McMaster Librarian Search and Renewal Committee, **Member** (2017)
- Dean of Graduate Studies Selection Committee, **Member** (2014)
- BIMR Seminar Series Selection Committee, **Member** (09/2014 – 04/2015)
- NSERC Master's CGS Selection Committee, **Member** (2014)
- NSERC Doctoral CGS Selection Committee, **Member** (2013)

(18) OTHER RESPONSIBILITIES:

Events Organized:

1. Scientific Advisory Board Member, 13th International Conference on the Chemistry and Biology of Mineralized Tissues (ICCBMT). October 20-25, 2019. Montebello, QC Canada.
2. Biomaterials Day, Materials Science and Engineering Recruitment Event, February 8, 2019. McMaster University, Hamilton, ON, Canada.

3. Organizing Committee, Advanced Electron Microscopy Conference in conjunction with CCEM User Group Meeting. June 4-5, 2018. McMaster University, Hamilton, ON, Canada.
4. Session Chair, Canadian Materials Science Conference, June 23, 2017. Ottawa, ON Canada
5. Session Chair, European Atom Probe Tomography Workshop, October 3, 2017. Gullmarstrand, Sweden.
6. 2nd Annual User Group Meeting, Canadian Centre for Electron Microscopy, McMaster University, June 2, 2017. Hamilton, ON Canada.
7. Canadian Centre for Electron Microscopy Outreach Events for 2017: Organized workshops and satellite events at Canadian Materials Science Conference (CMSC- Ottawa), Microscopical Society of Canada (MSC- Montreal), and Chemistry Society of Canada (CSC-Toronto) with CCEM Executive Committee.
8. 1st Annual User Group Meeting, Canadian Centre for Electron Microscopy, McMaster University, June 7, 2016. Hamilton, ON Canada.
9. Canadian Materials Science Conference: Biomaterials Session Chair. June 2016, Hamilton, ON Canada.
10. Canadian Microscopical Society Annual Meeting, (with J. Ortega and G. Botton), May 2015, Hamilton, ON Canada.

Select Outreach Activities outside of Service Commitments:

1. LEAP Summer Camp Activity, Development of a Bone Cement, July-August 2019, McMaster University.
2. iBiomed Level II Information Night, March 26, 2019. McMaster University.
3. Materials Science and Engineering Information Night, March 11, 2019. McMaster University.
4. Women in Engineering Speed Networking Mentor, March 21, 2017. McMaster University.
5. Women in Engineering Events: Big Sister Little Sister BBQ, September 15, 2017. McMaster University.
6. WISE (Women in Science and Engineering) Mentor of the Month. Delivered lecture on “What I Learned Through International Travel”. December 2015, McMaster University.
7. YES She Can summer camp for girls. Hosted laboratory on “Light vs Electron Microscopy”. August 2015, McMaster University.
8. McMaster Engineering Delegation to Notre Dame. August 25-27 2015, Faculty of Engineering, McMaster University.