

## Materials Australia – CMatP CPD Recording Sheet

**SUMMARY OF ACTIVITIES CLAIMED AS CONTINUING PROFESSIONAL DEVELOPMENT.** Use the table below to record your CPD hours. Your record must be comprehensive, and include, as a minimum, the details as shown on this pro forma. You may be requested to provide further information supporting your CPD claims at the time of review. **List the CPD by Type (I to VIII) and sub-total the hours for each.** Please refer to the Materials Australia (MA) CMatP Handbook for guidance on CPD Types I to VIII and Conditions.

Ref	Date	Type I to VIII	CPD activity / topic / provider	How activity has extended knowledge	Related Area of Practice Hours
					Minimum: 150 hours over a 3-year period
1	Mar 2019	II	Engineers Australia Fellows Luncheon, NSW Parliament House.	Listened to keynote address from Dr Marlene Kanga.	2
2	Jun 2019	II	Engineers Australia Fellows Luncheon, NSW Parliament House.	Listened to keynote address from George Maltabarow.	2
3	May 2019	II	Participated in ExpertsDirect CLE Webinar on “Maximising Your Expert Witness Engagement: An Expert Perspective”, presented by Professor Johan Duflou.	Enhanced my ability to act as an expert witness.	1
4	Oct 2019	II	Attended Materials Australia Student Awards Presentation at The Australian Microscopy and Microanalysis Facility, University of Sydney.	Listened to interesting talks and viewed posters by final year undergraduate students.	3
5	Nov 2019	II	Attended Materials Australia CMatP Mini-Conference at University of Wollongong.	Listened to interesting talks from CMatPs about their work.	3
6	Jul 2020	II	Attended Materials Australia CMatP online Mini-Conference.	Listened to interesting talks from CMatPs about their work.	2
7	Nov 2020	II	Attended Materials Australia online Student Awards Presentation.	Listened to interesting talks by final year undergraduate students.	2
8	Sep 2021	II	Attended Materials Australia CMatP online Mini-Conference.	Listened to interesting talks from CMatPs about their work.	2
9	Oct 2021	II	Attended Materials Australia online Student Awards Presentation.	Listened to interesting talks by final year undergraduate students.	2½
10	Dec 2020	IV	Undertook ASM Digital Short Course “Types of Corrosion”.	Extended my knowledge on the basics of corrosion.	2
11	2019 - 2021	IV	Reading of the quarterly magazine of Materials Australia.	Learning from reading interesting articles.	20

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					Minimum: 150 hours over a 3-year period
12	2019 - 2021	V	Served as NSW Branch Councillor for Materials Australia.	Helped to organise branch activities.	18
13	2019 - 2021	V	Served as Chairman of National Membership Committee and CMatP Sub-Committee for Materials Australia.	Gained leadership skills and useful management experience.	30
14	2019 - 2021	V	Served on National Council of Materials Australia.	Participated in making governance decisions.	3
15	2019 - 2021	V	Editorial Board Member for international journal Fatigue & Fracture of Engineering Materials & Structures (FFEMS).	Participated in activities related to the management of this journal.	6
16	Feb 2019	V	Reviewed Manuscript ID: FFEMS-7962, Original Contribution, "Research on S-N Curve of Ring Welding Structure Based on Structural Stress Method" by Guangwu Yang, Chengjian Che, Bing Yang, Tao Zhu, Feng Wang, Jujin Wang. Editor's decision was "Revise Manuscript".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
17	Mar 2019	V	Reviewed and re-reviewed Manuscript ID: FFEMS-8061, Technical Note, "Damage evolution around white etching layer during uniaxial loading" by Casey Jessop, Johan Ahlström, Christer Persson, Yubin Zhang. Editor's final decision was "Accept".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
18	Nov 2019	V	Reviewed and re-reviewed Manuscript ID: FFEMS-8427, Letter to the Editor, "SYNCHROTRON RADIATION MICROCOMPUTED TOMOGRAPHY FOR ASSESSING INTERNAL CRACKS IN COLD SPRAY REPAIRS" by R. Jones. Editor's decision was "Minor Amendments".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	3
19	Jul 2020	V	Reviewed Manuscript ID: FFEMS-8872, Original Contribution, "Study of the progressive failure of concrete by phase field modelling and experiments" by Jichang Wang, Xiaoming Guo, Nailong Zhang. Editor's decision was "Reject".	Knowledge on this topic has been gained through reading manuscript.	5
20	Mar	V	Reviewed and re-reviewed Manuscript ID: FFEMS-9362,	Knowledge on this topic has been gained through reading	5

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					Minimum: 150 hours over a 3-year period
	2021		Original Contribution, "Application of the Failure Assessment Diagram approach for contact fatigue damage evaluation in railway wheel steels" by Giorgio Donzella, Andrea Danesi, Angelo Mazzu, Candida Petrogalli, Andrea Ghidini, Michela Faccoli. Editor's final decision was "Accept".	manuscript. Published paper was improved.	
21	Sep 2021	V	Reviewed and re-reviewed Manuscript ID: FFEMS-9872, Original Article, "Analytical predicting the fatigue limit of round bars with axisymmetric surface morphology" by Zhengkun Cheng, Xiaochun Zhu, Yachen Zhang, Tao Wang, Filippo Berto. Editor's final decision was "Accept".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
22	Dec 2021	V	Reviewed Manuscript ID: FFEMS-10062, Original Article, "Fracture performance improvement and fracture process calculation of concrete for shotcrete use in hot and dry environments" by Pin Liu, Chen Guo, Shengai Cui, Qihong Wu, Wei Xia. Editor's final decision was "Accept".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
23	Jul 2020	V	Reviewed and re-reviewed International Journal of Vehicle Design Manuscript ID: IJVD 292707, "Design and fatigue analysis of an aluminium alloy aerodynamic wheel".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
24	Nov 2020	V	Reviewed International Journal of Materials and Product Technology Manuscript ID: IJMPT 298466, "Experimental Investigation on Tensile and Fracture Toughness Properties of Centrifugally Cast Al/Al <sub>2</sub> O <sub>3</sub> Functionally Graded Materials".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
25	Nov 2021	V	Reviewed Journal of Computational Design and Engineering Manuscript ID: JCDE-2021-382, Research Article, "Polymer gear contact fatigue reliability evaluation with small data set based on machine learning" by Genshen Liu, Peitang Wei, Kerui Chen, Huaiju Liu, Zehua Lu.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
26	Mar 2019	V	Reviewed and re-reviewed Journal of the Australian Ceramic Society Manuscript ID: ACSJ-D-18-00317, Research, "Effect of Metallic Content on Sintering behavior of NiFe <sub>2</sub> O <sub>4</sub> Based Cermet Inert Anode for Aluminum Electrolysis" by Zhigang Zhang,	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5

Ref	Date	Type I to VIII	CPD activity / topic / provider	How activity has extended knowledge	Related Area of Practice Hours
					Minimum: 150 hours over a 3-year period
			Xiaotong Lu, Jianrong Xu, Zhuokun Cao, Hongjie Luo.		
27	Dec 2020	V	Reviewed Manuscript ID: materials-1031584, Article, "Impact Of Carbon Foam Cell Sizes On The Microstructure And Properties Of Pressure Infiltrated Magnesium Matrix Composites" by Anita Olszowka-Myalska, Marcin Godzierz, Jerzy Myalski. Editor's decision was "Accept".	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
28	Jan 2021	V	Reviewed Manuscript ID: materials-1072043, Article, "Microstructure and phase structure analysis of alloyed ultra-high manganese steel" by Zhenghui Wang, Jingpei Xie, Qian Li, Wenyan Wang, Aiqin Wang and Pei Liu, Meng Zhou.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
29	Feb 2021	V	Reviewed and re-reviewed Manuscript ID: materials-1106813, Article, "Modeling of microstructure evolution during deformation processes by cellular automata – boundary conditions and space reorganization aspects" by Lukasz Lach.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
30	Mar 2021	V	Reviewed and re-reviewed Manuscript ID: materials-1150060, Article, "Kinetics of austenite phase transformations in new-developed 0.17C-2Mn-1Si-0.2Mo forging steel with Ti and V microadditions" by Mateusz Morawiec, Anna Wojtacha and Marek Opiela.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
31	Nov 2021	V	Reviewed and re-reviewed Mechanics of Materials Manuscript ID: MECMAT-D-21-00052, Research Paper, "Prediction of fatigue crack growth under variable amplitude loading by artificial neural network-based Lagrange interpolation" by Lin Zhang, Xiaohui Wei.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
32	Jul 2020	V	Reviewed Manuscript ID: metals-877529, Article, "Fatigue corrosion behavior of friction welded dissimilar joints in different testing conditions" by Stefano Rossi, Francesca Russo, Alberto Maria Lemmi, Viglio Fontanari and Matteo Benedetti.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
33	Sep 2020	V	Reviewed Manuscript ID: metals-945007, Article, "Design of the Tracks for the Demining System – Investigating the Properties of Selected Types of Welded Joints" by Miroslav Blatnický, Peter	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5

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					Minimum: 150 hours over a 3-year period
			Kopas, Milan Saga, Jan Dizo, Maria Blatnicka and Marian Handrik.		
34	Nov 2020	V	Reviewed and re-reviewed Manuscript ID: metals-983553, Article "The Load Test Method of Axle Box Bearings in Operation" by Xianling Huang, Qiang Li, Zhiming Liu, Xi Wang and Binjie Wang.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
35	May 2021	V	Reviewed Manuscript ID: metals-1244706, Article, "MWCNT-reinforced AA7075 composites: effect of reinforcement percentage on mechanical properties" by Iria Feijoo, Gloria Pena, Marta Cabeza, M Julia Cristobal and Pilar Rey.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
36	Jun 2021	V	Reviewed Manuscript ID: metals-1246969, Article, "Effects of Microstructure on Low temperature Toughness of Heavy-wall X80xD1422mm Hot Induction Seamless Bend" by Juntai Hu, Yu Liu, Ge Wang and Qiang Li.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
37	Jun 2021	V	Reviewed Manuscript ID: metals-1252426, Communication, "Survival Rate and Deformation of External Hexagon Implants with One-Piece Zirconia Crowns" by Marco Antonio Bottino, Renata Marques de Melo, Flavio Rosa de Oliveira, Clarice Ferreira Sabino, Jose Cicero Dinato, Lais Regiane da Silva-Concilio and Joao Paulo Mendes Tribst.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
38	Jul 2021	V	Reviewed Manuscript ID: metals-1274863, Article, "Failure Mechanism and Strength Prediction Model of T-Joint of Composite Sandwich Structure" by Yang Liu, Mingxuan Li, Xiaofeng Lu, Xiaolei Zhu.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
39	Jul 2021	V	Reviewed Manuscript ID: metals-1292411, Article, "Fatigue performance of thin laser butt welds in HSLA steel" by Patricio Riofrio, Fernando Antunes, Jose Ferreira, Antonio Castanhola and Carlos Capela.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
40	Jul 2021	V	Reviewed Manuscript ID: metals-1294185, Article, "Numerical simulation of a high-speed impact of metal plates using a three-fluid model" by Petr Chuprov, Pavel Utkin and Svetlana Fortova.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5

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					Minimum: 150 hours over a 3-year period
41	Aug 2021	V	Reviewed Manuscript ID: metals-1339068, Article, "Fracture estimation in ship collision analysis – strain rate and thermal softening effects" by Burak Can Cerik and Joonmo Choung.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
42	Sep 2021	V	Reviewed Manuscript ID: metals-1357358, Article, "Analysis and Control of Cracking and Wrinkling at the End of Seamless Steel Tube with Multi-pass Large Deformation Diameter-reducing" by Heng Liu, Liandong Wang, Xiaodi Wang and Qiying Tan.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
43	Oct 2021	V	Reviewed Manuscript ID: metals-1383072, Article, "Investigation on primary recrystallization and decarbonization with different heating rates of intermediate annealing of Nb-containing grain-oriented silicon steel" by Xin Tian, Shuang Kuang, Jie Li, Jing Guo, and Yunli Feng.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
44	Nov 2021	V	Reviewed Manuscript ID: metals-1452929, Article, "Evaluation of Fatigue Characteristics of Aluminum Alloys and Mechanical Components Using Extreme Value Statistics and C-specimens" by Jungsub Lee, Sang-Youn Park, and Byoung-Ho Choi.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
45	Apr 2021	V	Reviewed Coatings Manuscript ID: 1195417, Review, "Plasma Electrolytic Oxidation Ceramic Coatings on Zirconium (Zr) and Zr-Alloys: Fundamental Mechanisms, Properties, and Applications" by Navid Attarzadeh and C. V. Ramana.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
46	May 2021	V	Reviewed Coatings Manuscript ID: 1240294, Review, "Plasma Electrolytic Oxidation Ceramic Coatings on Zirconium (Zr) and Zr-Alloys: Part-II: Properties and Applications" by Navid Attarzadeh and C. V. Ramana.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
47	Aug 2021	V	Reviewed Manuscript ID: polymers-1359314, Article, "Multiscale simulation of semi-crystalline polymers to predict mechanical properties" by Tobias Daniel Horn, Dario Heidrich, Hans Wulf, Michael Gehde and Jorn Ihlemann.	Knowledge on this topic has been gained through reading manuscript. Published paper was improved.	5
48	Nov 2019	VI	Prepared and gave Materials Australia CMatP presentation entitled "Effects of Residual Stress on Fatigue Crack Growth from a T-butt Weld Toe" at University of Wollongong.	Knowledge was gained through my research work on this topic.	2
49	Dec	VI	Prepared and had published my CMatP Profile in Materials	Experience was gained in writing a magazine article.	2

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					Minimum: 150 hours over a 3-year period
	2019		Australia magazine.		
50	Jul 2019	VI	Published journal paper "The Effect of Raster Orientation on the Static and Fatigue Properties of Filament Deposited ABS Polymer", Natalie S.F. Jap, Garth M. Pearce, Alan K. Hellier, Nicholas Russell, William C. Parr and William R. Walsh, <b>International Journal of Fatigue</b> , Vol. 124, July (2019) pp. 328-337. <a href="https://doi.org/10.1016/j.ijfatigue.2019.02.042">https://doi.org/10.1016/j.ijfatigue.2019.02.042</a>	Knowledge on this topic has been gained through writing paper. Published paper adds to knowledge in this field.	75
51	Jan 2020	VI	Published journal paper "Fracture Toughness of Cast and Extruded Al6061/15%Al <sub>2</sub> O <sub>3</sub> p Metal Matrix Composites", H.A. Hassan, A.K. Hellier, A.G. Crosky and J.J. Lewandowski, <b>Australian Journal of Mechanical Engineering</b> , Vol. 18, No. S1 (2020) pp. 37-45. <a href="https://doi.org/10.1080/14484846.2018.1463628">https://doi.org/10.1080/14484846.2018.1463628</a>	Knowledge on this topic has been gained through writing paper. Published paper adds to knowledge in this field.	75
52	Oct 2020	VI	Published journal paper "Microstructure and Mechanical Properties of Wire Arc Additively Manufactured Hastelloy C276 Alloy", Zhijun Qiu, Bintao Wu, Hanliang Zhu, Zhiyang Wang, Alan Hellier, Yan Ma, Huijun Li, Ondrej Muransky and David Wexler, <b>Materials &amp; Design</b> , Vol. 195, October (2020), Article 109007, pp. 1-12. <a href="https://doi.org/10.1016/j.matdes.2020.109007">https://doi.org/10.1016/j.matdes.2020.109007</a>	Knowledge on this topic has been gained through writing paper. Published paper adds to knowledge in this field.	75
53	Feb 2019 - Jul 2019	VII	Acted as expert witness in the matter of "B & D Ritter Pty Ltd & Anor ats Kevin Sidney Schneider", Unisearch Expert Opinion Services Job Ref. UN001418 for McCabe Curwood.	I was asked to provide an expert report and supplementary report on the collapse of a two-step reinforced plastic ladder which resulted in a personal injury claim. I gained knowledge on the ladder material and mechanisms.	26
54	Apr 2019 - Jun 2019	VII	Acted as expert witness in the matter of "UCP Australia Pty Ltd v Quality Castings Pty Ltd", Unisearch Expert Opinion Services Job Ref. UN003485 for Bartier Perry Lawyers.	I was asked to provide an expert report and supplementary report on a stainless steel pump top-case and lower-case casting which was found to be leaking when put into service due to the presence of casting defects. I gained knowledge on castings.	24¾
55	Aug	VII	Provided expert materials consulting advice to LINOX Technology	I was asked to provide expert advice on selecting a new metal to	4

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					Minimum: 150 hours over a 3-year period
	2019 - Nov 2019		Pty Ltd.	act as a stiffener in the redesign of a polymer spigot employed in pool fencing and balustrades. I gained knowledge of the design and material selection processes.	
56	Jul 2020 - Oct 2021	VII	Acted as expert witness in the matter of "Central Plumbing Pty Ltd ats Watpac Construction Pty Ltd", ExpertsDirect Job Ref. #2003226 for Hall & Wilcox Lawyers.	I was asked to provide an expert report on the cause of the failure of a copper flange adaptor installed in a commercial building. I gained knowledge of the plumbing industry.	22¼
57	Feb 2021 - Dec 2021	VII	Acted as expert witness in the matter of "Vossloh Cogifer Australia Pty Ltd ats Acciona Infrastructure Australia Pty Ltd", ExpertsDirect Job Ref. #2003896 for Lander & Rogers.	I was asked to provide an expert report in relation to a claim brought by Acciona for rectification costs associated with the repair of an alleged failed factory weld on the Sydney Light Rail. I gained knowledge of specimen preparation and metallography.	45¾
					(Required 150)
<b>Total of All Types</b>					608¼

TYPE	Conditions relevant to type of CPD over a 3-year period	Transpose Time here
Type I	No limit.	Nil
Type II	No limit.	19½
Type III	MAXIMUM of 75 hours may be recorded.	Nil
Type IV	Combined total of recorded types Type III and IV to be a MAXIMUM of 95 hours, including reading Materials Australia magazine not greater than 20 hours.	22
Type V	No limit.	215
Type VI	Up to 45 hrs for each published paper. Up to MAXIMUM of 75 hours for each paper subject to critical review.	229
Type VII	For Chartered EA Members and CMatPs employed in tertiary teaching or academic research - a MINIMUM of 40 hours industry involvement.	122¾
Type VIII	You will need to provide documentary justification for this type. A MAXIMUM of 50 hours.	Nil
<b>Total</b>	<b>Total CPD activities (Goal 150 hours/3-year period)</b>	608¼

Name: Dr Alan Keith Hellier

Signature: *A. K. Hellier*

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