

---

## Laboratory for Joining Technologies & Corrosion

### Publications 2014

---

- K.K. Sobol, *Controlling diffusion for rapid formation of interconnects*, Thesis Nr. 21944, ETH Zürich, 2014 [DOI: [10.3929/ethz-a-010186591](https://doi.org/10.3929/ethz-a-010186591)].
- D. Walaszek, M. Senn, A. Wichser, M. Faller, B. Wagner, E. Bulska, A. Ulrich, *Minimally-invasive laser ablation inductively coupled plasma mass spectrometry analysis of model ancient copper alloys*, **Spectrochimica Acta B** 99 (2014) 115 - 120 [DOI: [10.1016/j.sab.2014.06.023](https://doi.org/10.1016/j.sab.2014.06.023)].
- D. Bernoulli, K. Häfliger, K. Thorwarth, G. Thorwarth, R. Hauert, R. Spolenak, *Cohesive and adhesive failure of hard and brittle films on ductile metallic substrates: A film thickness size effect analysis of the model system hydrogenated diamond-like carbon ( $\alpha$ -C:H) on Ti substrates*, **Acta Materialia** 83 (2015) 29–36 [DOI: [10.1016/j.actamat.2014.09.044](https://doi.org/10.1016/j.actamat.2014.09.044)].
- D. Rothenstein, D. Shopova-Gospodinova, G. Bakradze, L.P.H. Jeurgens, J. Bill, *Generation of Luminescence in Biomineralized Zirconia by Zirconia-Binding Peptides*, **CrystEngComm** 17 (2015) 1783-1790 [DOI: [10.1039/c4ce01510j](https://doi.org/10.1039/c4ce01510j)].
- M. Koster, C. Kenel, W.J. Lee, C. Leinenbach, *Digital image correlation for the characterization of fatigue damage evolution in brazed steel joints*, **Procedia Materials Science** 3 ( 2014 ) 1117 – 1122 [DOI: [10.1016/j.mspro.2014.06.182](https://doi.org/10.1016/j.mspro.2014.06.182)].
- W.J. Lee, Y.J. Cho, Y. Choi, Y.H Park, *Practical Applicability and Limitation of Representative Volume Element Approach to Model Creep Behaviors of Metal Matrix Composites*, **Materials Transactions** 55 (2014) 1383 – 1390 [DOI: [10.2320/matertrans.M2014137](https://doi.org/10.2320/matertrans.M2014137)].
- M. Pawelkiewicz, M. Danielewski, J. Janczak-Rusch, *Intermetallic Layer Growth Kinetics in Sn-Ag-Cu System using Diffusion Multiple and Reflow Techniques*, **Advanced Engineering Materials** (2014) [DOI: [10.1002/adem.201400226](https://doi.org/10.1002/adem.201400226)].
- A. Lis, M.S Park, R. Arroyave, C. Leinenbach, *Early stage growth characteristics of  $Ag_3Sn$  intermetallic compounds during solid–solid and solid–liquid reactions in the Ag–Sn interlayer system: Experiments and simulations*, **Journal of Alloys and Compounds** 617 (2014) 763–773 [DOI: [10.1016/j.jallcom.2014.08.082](https://doi.org/10.1016/j.jallcom.2014.08.082)].
- P.Y. Dapsens, C.M. J. Jagielski, R. Hauert, J. Pérez-Ramírez, *Hierarchical Sn-MFI zeolites prepared by facile top-down methods for sugar isomerisation*, **Catalysis Science & Technology** 4 (2014) 2302-2311 [DOI: [10.1039/c4cy00172a](https://doi.org/10.1039/c4cy00172a)].
- E. Ura-Binczyka, A. Beni, M. Lewandowska, P. Schmutz, *Passive oxide film characterisation on Al-Cr-Fe and Al-Cu-Fe-Cr complex metallic alloys in neutral to alkaline electrolytes by photo- and electrochemical methods*, **Electrochimica Acta** 139 (2014) 289–301 [DOI: [10.1016/j.electacta.2014.07.010](https://doi.org/10.1016/j.electacta.2014.07.010)].
- A. Elrefaey, J. Janczak-Rusch, M.M. Koebel, *Direct glass-to-metal joining by simultaneous anodic bonding and soldering with activated liquid tin solder*, **Journal of Materials Processing Technology** 214 (2014) 2716–2722 [DOI: [10.1016/j.jmatprotec.2014.06.006](https://doi.org/10.1016/j.jmatprotec.2014.06.006)].
- W. J. Zhu, L. I. Duarte, C. Leinenbach, *Experimental study and thermodynamic assessment of the Cu–Ni–Ti system*, **CALPHAD: Computer Coupling of Phase Diagrams and Thermochemistry** 47 (2014) 9–22 [DOI: [10.1016/j.calphad.2014.06.002](https://doi.org/10.1016/j.calphad.2014.06.002)].
- K. Schöller, S. Küpfer, L. Baumann, P. M. Hoyer, D. de Courten, R. M. Rossi, A. Vetushka, M. Wolf, N. Bruns, L. J. Scherer, *From Membrane to Skin: Aqueous Permeation Control Through Light-Responsive Amphiphilic Polymer Co-Networks*, **Advanced Functional Materials** (2014) [DOI: [10.1002/adfm.201400671](https://doi.org/10.1002/adfm.201400671)].
- K. Thorwarth, G. Thorwarth, R. Figi, B. Weisse, M. Stiefel, R. Hauert, *On Interlayer Stability and High-Cycle Simulator Performance of Diamond-like Carbon Layers for Articulating Joint Replacements*, **International Journal of Molecular Sciences** 15 (2014) 10527-10540 [DOI: [10.3390/ijms150610527](https://doi.org/10.3390/ijms150610527)].

- A. Beni, N. Ott, M. Pawelkiewicz, M. Wardé, K. Young, B. Bauer, P. Rajput, B. Detlefs, J. Zegenhagen, R. McGrath, M.-G. Barthés-Labrousse, L. P.H. Jeurgens, P. Schmutz, *Hard X-ray Photoelectron Spectroscopy (HAXPES) characterisation of electrochemical passivation oxide layers on Al–Cr–Fe complex metallic alloys (CMAs)*, **Electrochemistry Communications** 46 (2014) 13-17 [DOI: [10.1016/j.elecom.2014.05.024](https://doi.org/10.1016/j.elecom.2014.05.024)].
- G. Pigozzi, P. Schmutz, *Tailoring Nano*, Research Media Ltd. **International Innovation** (2014) 47-49 [URL: [source](#)].
- R. W. Bittner, M. Gürth, L. I. Duarte, C. Leinenbach, H. S. Effenberger, K. W. Richter, *Al–Ge–Ti: Phase equilibria and structural characterization of new ternary compounds*, **Intermetallics** 53 (2014) 157-168 [DOI: [10.1016/j.intermet.2014.05.003](https://doi.org/10.1016/j.intermet.2014.05.003)].
- M. Hupp, *Selektive Laserstrukturierung von dielektrischen Schichten*, in: Reihe Realwissenschaften, **AV Akademikerverlag** (2014) 1-128 [URL: [source](#)].
- R. Gaspari, R. Erni, Y. Arroyo, M. Parlinska-Wojtan, J. Dshemuchadse, C. A. Pignedoli, D. Passerone, P. Schmutz, A. Beni, *Real space crystallography of a complex metallic alloy: high-angle annular dark-field scanning transmission electron microscopy of o-Al<sub>4</sub>(Cr,Fe)*, **Journal of Applied Crystallography** 47 (2014) 1026-1031 [DOI: [10.1107/S1600576714008656](https://doi.org/10.1107/S1600576714008656)].
- J. Baier, N.J. Blumenstein, J. Preusker, L.P.H. Jeurgens, U. Welzel, T.A. Do, J. Pleiss, J. Bill, *The influence of ZnO-binding 12-mer peptides on bio-inspired ZnO formation*, **CrystEngComm** 16 (2014) 16, 5301–5307 [DOI: [10.1039/C4CE00520A](https://doi.org/10.1039/C4CE00520A)].
- A. Cladera, B. Weber, C. Leinenbach, C. Czaderski, M. Shahverdi, M. Motavalli, *Iron-based shape memory alloys for civil engineering structures: An overview*, **Construction and Building Materials** 63 (2014) 281–293 [DOI: [10.1016/j.conbuildmat.2014.04.032](https://doi.org/10.1016/j.conbuildmat.2014.04.032)].
- M. Roth, R. Hauert, Herausgeber G. Lange, M. Pohl, *Systematische Beurteilung technischer Schadensfälle*, **Wiley-VCH** 6 (2014) 1-548 [URL: [source](#)].
- R. Transchel, C. Leinenbach, K. Wegener, *Cutting and ploughing forces for small clearance angles of hexa-octahedron shaped diamond grains*, **CIRP Annals - Manufacturing Technology** 63 (2014) 325–328 [DOI: [10.1016/j.cirp.2014.03.030](https://doi.org/10.1016/j.cirp.2014.03.030)].
- L. Sagarna, S. Populoh, A. Shkabko, J. Eilertsen, A. E. Maegli, R. Hauert, M. Schrade, L. Karvonen, A. Weidenkaff, *Influence of the Oxygen Content on the Electronic Transport Properties of Sr<sub>x</sub>Eu<sub>1-x</sub>TiO<sub>3-δ</sub>*, **The Journal of Physical Chemistry C** 118 (2014) 7821-7831 [DOI: [10.1021/jp500480c](https://doi.org/10.1021/jp500480c)].
- Ch. Kottler, R. Longtin, S. Giudice, R. Jose-James, P. Niedermann, A. Neels, R. Kaufmann, J. Ramon Sanchez-Valencia, H.-R. Elsener, O. Gröning, C. Leinenbach, P. Gröning, A. Dommann, *X-ray source downscaling enabled by combining microfabricated electrodes with carbon nanotube cold electron emitters*, **Microelectronic Engineering** 122 (2014) 13–19 [DOI: [10.1016/j.mee.2014.03.010](https://doi.org/10.1016/j.mee.2014.03.010)].
- S. Brodacka, M. Kozłowski, R. Kozubski, J. Janczak-Rusch, *Atomistic simulation of the eutectic mixture in bulk and nano-layered Ag–40 at.%Cu alloy*, **Computational Materials Science** 89 (2014) 30-35 [DOI: [10.1016/j.commatsci.2014.03.021](https://doi.org/10.1016/j.commatsci.2014.03.021)].
- K. Gałazka, S. Populoh, L. Sagarna, L. Karvonen, W. Xie, A. Beni, P. Schmutz, J. Hulliger, A. Weidenkaff, *Phase formation, stability, and oxidation in (Ti, Zr, Hf)NiSn half-Heusler compounds*, **Physica Status Solidi A** 1-8 (2014) 1221–1472 [DOI: [10.1002/pssa.201300209](https://doi.org/10.1002/pssa.201300209)].
- D. Flötotto, Z.M. Wang, L.P.H. Jeurgens, E.J. Mittemeijer, *Intrinsic stress evolution during amorphous oxide film growth on Al surfaces*, **Applied Physics Letters** 104 (2014) 091901 [DOI: [10.1063/1.4867471](https://doi.org/10.1063/1.4867471)].
- G.M. Ilari, N. Kränzlin, R. Longtin, J.R. Sanchez-Valencia, S. Schneider, M.D. Rossell, M. Niederberger, R. Erni, *Single-step functionalization of vertically aligned MWCNTs with Cu and Ni by chemical reduction of copper and nickel acetyl acetonate in benzyl alcohol*, **Carbon** 73 (2014) 146–154 [DOI: [10.1016/j.carbon.2014.02.050](https://doi.org/10.1016/j.carbon.2014.02.050)].

- J. Janczak-Rusch, G. Kaptay, L.P.H. Jeurgens, *Interfacial design for joining technologies – An historical perspective*, **Journal of Materials Engineering and Performance** 23 (2014) 1608-1613 [DOI: [10.1007/s11665-014-0928-5](https://doi.org/10.1007/s11665-014-0928-5)].
- C. Czaderski, M. Shahverdi, R. Brönnimann, C. Leinenbach, M. Motavalli, *Feasibility of iron-based shape memory alloy strips for prestressed strengthening of concrete structures*, **Construction Building Materials** 56 (2014) 94-105 [DOI: [10.1016/j.conbuildmat.2014.01.069](https://doi.org/10.1016/j.conbuildmat.2014.01.069)].
- J. Janczak-Rusch, B. Straumal, A. Passerone, L.P.H. Jeurgens, G. Kaptay, I. Kaban, *Guest Editorial of the Special Issue Focus 'EUROMAT 2013' on the Topic Area 'Joining and Interface Design'*, **Journal of Materials Engineering and Performance** 23 (2014) 1513-1514 [DOI: [10.1007/s11665-014-0994-8](https://doi.org/10.1007/s11665-014-0994-8)].
- G. Kaptay, J. Janczak-Rusch, G. Pigozzi, L.P.H. Jeurgens, *Theoretical Analysis of Melting Point Depression of Pure Metals in Different Initial Configurations*, **Journal of Materials Engineering and Performance** 23 (2014) 1600-1607 [DOI: [10.1007/s11665-014-0885-z](https://doi.org/10.1007/s11665-014-0885-z)].
- J. Kuebler, J. Janczak-Rusch, *Aktivlötten von Si<sub>3</sub>N<sub>4</sub>-TiN-Keramik und Stahl partikelverstärkten Ag-Cu Lötwerkstoffen*, in: Technische Keramische Werkstoffe (Jochen Kriegesmann Hrsg.), **HvB Verlag** (Januar 2014), Kapitel 3.9.2.2 [URL: [source](#)].
- N. Weyrich, S. Jin, L. Duarte, C. Leinenbach, *Joining of Cu, Ni, and Ti Using Au-Ge-Based High-Temperature Solder Alloys*, **Journal of Materials Engineering and Performance** 23 (2014) 1585-1592 [DOI: [10.1007/s11665-014-0864-4](https://doi.org/10.1007/s11665-014-0864-4)].
- D. Flötotto, Z.M. Wang, L.P.H. Jeurgens, E.J. Mittemeijer, *Evolution of surface stress during oxygen exposure of clean Si(111), Si(100), and amorphous Si surfaces*, **Journal of Applied Physics** 115 (2014) 023501 [DOI: [10.1063/1.4850936](https://doi.org/10.1063/1.4850936)].
- N. Ott, A. Beni, A. Ulrich, C. Ludwig, P. Schmutz, *Flow microcapillary plasma mass spectrometry-based investigation of new Al–Cr–Fe complex metallic alloy passivation*, **Talanta** 120 (2014) 230-238 [DOI: [10.1016/j.talanta.2013.11.091](https://doi.org/10.1016/j.talanta.2013.11.091)].
- S. Jin, L.I. Duarte, C. Leinenbach, *Experimental study and thermodynamic description of the Au-Cu-Ge system*, **Journal of Alloys and Compounds** 588 (2014) 7-16 [DOI: [10.1016/j.jallcom.2013.11.054](https://doi.org/10.1016/j.jallcom.2013.11.054)].
- E. Schlenther, H. Özcoşban, H. Jelitto, M. Faller, G.A. Schneider, T. Graule, C.G., J. Kuebler, *Fracture toughness and corrosion behaviour of infiltrated Al<sub>2</sub>O<sub>3</sub>/P – Steel composites*, **Materials Science & Engineering A** 590 (2014) 132-139 [DOI: [10.1016/j.msea.2013.10.007](https://doi.org/10.1016/j.msea.2013.10.007)].
- Y. Cho, W. Lee, Y. Park, *Effect of Boundary Conditions on the Numerical Solutions of Representative Volume Element Problems for Random Heterogeneous Composite Microstructures*, **Metals and Materials International** 20 (2014) 1085-1093 [DOI: [10.1007/s12540-014-6012-8](https://doi.org/10.1007/s12540-014-6012-8)].
- T. Künniger, A. C. Gerecke, A. Ulrich, A. Huch, R. Vonbank, M. Heeb, A. Wichser, R. Haag, P. Kunz, M. Faller, *Release and environmental impact of silver nanoparticles and conventional organic biocides from coated wooden façades*, **Environmental Pollution** 184 (2014) 464-471 [DOI: [10.1016/j.envpol.2013.09.030](https://doi.org/10.1016/j.envpol.2013.09.030)].
- G. Pigozzi, D. Mukherji, Y. Elerman, P. Strunz, R. Gilles, M. Hoelzel, B. Barbier, P. Schmutz, *Effects of size reduction on the structure and magnetic properties of core–shell Ni<sub>3</sub>Si/silica nanoparticles prepared by electrochemical synthesis*, **Journal of Alloys and Compounds** 584 (2014) 119-127 [DOI: [10.1016/j.jallcom.2013.09.035](https://doi.org/10.1016/j.jallcom.2013.09.035)].