

Publications 2011 (People in TEM Gemini Centre are highlighted)

Journal publications:

Anawati, Diplas S., Holme B., **Solberg J.K.**, Mathiesen R.H., **Walmsley J.C.** and Nisancioglu, "[Surface Characterization of Heat Treated AlPbCu Model Alloys](#)", *Journal of the Electrochemical Society*, 158, C178-C184, 2011.

Bjørge R., Nakashima P. N. H., **Marioara C. D.**, **Andersen S. J.**, Muddle B. C., Etheridge J. and **Holmestad R.**, "[Precipitates in an Al-Mg-Ge alloy studied by aberration-corrected scanning transmission electron microscopy](#)", *Acta Materialia*, 59, 6103-6109, 2011.

Butler K.T., **Vullum P.E.**, **Muggerud A.M.**, Cabrera E. and Harding J.H., "[Structural and electronic properties of silver/silicon interfaces and implications for solar cell performance](#)", *Physical Review B*, 83, 235307, 2011.

Chen Y.J., **Li Y.J.**, **Walmsley J.C.**, Dumoulin S., Gireesh S.S., Armada S., Skaret P.C., Roven H.J., "[Quantitative analysis of grain refinement in titanium during equal channel angular pressing](#)", *Scripta Materialia*, 64, 904-907, 2011.
doi:10.1016/j.scriptamat.2011.01.030.

Chinga-Carrasco, G., **Yu, Y.** and Diserud, O. H., "[Quantitative Electron Microscopy of Cellulose Nanofibril Structures from Eucalyptus and Pinus radiata Kraft Pulp Fibers](#)", *Microscopy and Microanalysis*, 17, 563-571, 2011.

Dahl, P. I., Lein, H. L., **Yu, Y.**, Tolchard, J. R.; Grande, T., Einarsrud, M.-A., Kjølseth, C., Norby, T. and Haugsrud, R., "[Microstructural characterization and electrical properties of spray pyrolyzed conventionally sintered or hot-pressed BaZrO₃ and BaZr_{0.9}Y_{0.1}O₃-delta](#)", *Solid State Ionics*, 182, 32-40, 2011.

Dehghan R., Hansen T.W., Wagner J.B., Holmen A., Rytter E., Borg Ø, **Walmsley J.C.**, "[In-Situ Reduction of Promoted Cobalt Oxide Supported on Alumina by Environmental Transmission Electron Microscopy](#)"; *Catalysis Letters*, 141, 754-761, 2011.

Di Sabatino, M., Binetti, S., Libal, J., Acciarri, **Nordmark, H.**, and Øverlid, E.J., "Oxygen distribution on a multicrystalline silicon ingot grown from upgraded metallurgical silicon", *Solar energy materials and solar cells*, 95, 529-533, 2011.

Eberg E., **van Helvoort A.T.J.**, Takahashi R., Gass M., Mendis B., Bleloch A., **Holmestad R.**, and Tybell T., "[EELS investigation of Pb and Ti hybridization with O at the PbTiO₃/SrTiO₃ interface](#)", *Journal of Applied Physics*, 109, 034104, 2011.

Lögberg, S., Boutonnet, M., **Walmsley, J.C.**, Järås, S., Holmen, A., Blekkan, E.A., "[Effect of water on the space-time yield of different supported cobalt catalysts during Fischer-Tropsch synthesis](#)", *Applied Catalysis A: General*, 393, 109-121, 2011.

Madaro F., **Sæterli R.**, Tolchard J.R., Einarsrud M.-A., **Holmestad R.** and Grande T., "[Molten salt synthesis of K₄Nb₆O₁₇, K₂Nb₄O₁₁ and KNb₃O₈ crystals with needle- or plate-like morphology](#)", *Cryst. Eng. Comm*, 13, 1304-1313, 2011.

Madaro, F., Tolchard, J. R., **Yu, Y.**, Einarsrud, M.-A. and Grande, T., “[Synthesis of anisometric KNbO₃ and K_{0.5}Na_{0.5}NbO₃ single crystals by chemical conversion of non-perovskite templates](#)”, *CrystEngComm*, 13, 1350-1359, 2011.

Moses A. F., Hoang T. B., Ahtapodov L., Dheeraj D. L., **van Helvoort A. T. J.**, Fimland B.-O., and Weman H., “[Photoluminescence Polarization Anisotropy in a Single Heterostructured III-V Nanowire with Mixed Crystal Phases](#)”, *AIP Conference Proceedings*, 1399, 559, 2011.

Nagayoshi H., **Nordmark H.**, Nishimura S., Terashima K., **Marioara C. D.**, **Walmsley J. C.**, **Holmestad R.** and A. Ulyashin, “[Vapour-Solid-Solid Si Nano-Whiskers Growth Using Pure Hydrogen as Source Gas](#)”, *Thin Solid Films*, 519, 4613–4616, 2011.
doi:10.1016/j.tsf.2011.01.321.

Nordmark, H., Ulyashin, A.G., **Walmsley, J.C.** and **Holmestad, R.** “[H-initiated extended defects from plasma treatment: Comparison between c-Si and mc-Si](#)”, *Journal of Physics: Conference series*, 281, 012029, 2011. doi: 10.1088/1742-6596/281/1/012029

Sæterli, R., Flage-Larsen, E., **Friis, J.**, Løvvik, O.M., Pacaud, J., **Marthinsen K.** and **Holmestad. R.**, “[Experimental and theoretical study of electron density and structure factors in CoSb₃](#)”, *Ultramicroscopy*, 111, 847–853, 2011. doi:10.1016/j.ultramic.2010.08.002.

Teichmann K., **Marioara C.D.**, **Andersen S.J.**, Pedersen K.O., Gulbrandsen-Dahl S., Kolar M., **Holmestad R.** and **Marthinsen K.**, “[HRTEM study of the effect of deformation on the early precipitation behaviour in an AA6060 Al–Mg–Si alloy](#)”, *Philosophical Magazine*, 91, 3744-3754, 2011. DOI:10.1080/14786435.2011.593577

Todorovic J., Moses A. F., Karlberg T., Olk P, Dheeraj D. L., Fimland B.-O., Weman H. and **van Helvoort A. T. J.**, “[Correlated micro-photoluminescence and electron microscopy studies of the same individual heterostructured semiconductor nanowires](#)”, *Nanotechnology*, 22, 325707, 2011.

Todorovic J., Moses A. F., Dheeraj D. L., Olk P, Fimland B.-O., Weman H. and **van Helvoort A. T. J.**, “[Correlated micro-photoluminescence and electron microscopy study of a heterostructured semiconductor nanowire](#)”, *Journal of Physics: Conference Series*, 326, 012043, 2011. (doi:10.1088/1742-6596/326/1/012043)

Torsæter M., Lefebvre W., **Marioara C. D.**, **Andersen S. J.**, **Walmsley J. C.** and **Holmestad R.**, “[Study of intergrown L and Q’ precipitates in Al-Mg-Si-Cu alloys](#)”, *Scripta Materiala*, 64, 817-820, 2011. doi:10.1016/j.scriptamat.2011.01.008.

Vanhaecke, E., Huang, F., **Yu, Y.**, Rønning, M., Holmen, A. and Chen, D., “Catalytic consequences of the interface between iron catalysis and foils in synthesis of aligned nanocarbons on foils”, *Topics in Catalysis*, 54, 986-997, 2011.

Vullum P.E., Pitt, M.P., **Walmsley, J.C.**, Hauback, B.C., **Holmestad, R.**, “[TEM characterization of pure and transition metal enhanced NaAlH₄](#)” *Journal of Alloys and Compounds*, 509, 281-289, 2011.

Weigand C. C., Bergren M. R., Ladam C., **Tveit J.**, **Holmestad R.**, **Vullum P. E.**, **Walmsley J. C.**, Dahl Ø., Furtak T. E., Collins R. T., Grepstad J., and Weman H., “[On the formation of ZnO Nanosheets Grown by Catalyst-Assisted Pulsed Laser Deposition](#)”, *Crystal Growth and Design*, 5298–5304, 2011. DOI: 10.1021/cg2013073

Wu, Y., Lototsky, M. V., **Solberg, J. K.** and Yartys, V. “[Microstructural evolution and improved hydrogenation-dehydrogenation kinetics of nanostructured melt-spun Mg-Ni-Mm alloys](#)”, *Journal of Alloys and Compounds*, 509, 640-645, 2011.

Wu, Y., Xing, N., Lu, Z.-C., Han, W., Zhou, S. X., **Solberg, J. K.** and Yartys V., “[Microstructural evolution of melt-spun Mg-10Ni-2Mm hydrogen storage alloy](#)”, *Transactions of Nonferrous Metals Society of China*, 21, 121-126, 2011.

Zarubova, S., Rane, S. P., Yang, J., **Yu, Y.**, Zhu, Y.; Chen, De and Holmen, A., “[Fischer-Tropsch Synthesis on Hierarchically Structured Cobalt Nanoparticle/Carbon Nanofiber/Carbon Felt Composites](#)”, *ChemSusChem*, 4, 935-942, 2011.

Zhao, T., Kvande, I., **Yu, Y.**, Rønning, M., Holmen, A. and Chen, De., ”[Synthesis of Platelet Carbon Nanofiber/Carbon Felt Composite on in Situ Generated Ni-Cu Nanoparticles](#)”, *The Journal of Physical Chemistry C*, 115, 1123-1133, 2011.

Conference talks/posters/seminars/meetings (Presenter underlined)

L. Ahtapodov, P. Olk, J. **Todorovic**, T.S. Mjåland, M. Eriksson, P. Bergman, D.L. Dheeraj, A.T.J. **van Helvoort**, B.O. Fimland and H. Weman, “Combined studies of single Au-assisted GaAs/AlGaAs core/shell nanowires with PL spectroscopy and TEM”, PDI Topical Workshop on MBE-grown Arsenide Nanowires, Berlin, Germany, 8-9 September 2011. [talk]

L. Ahtapodov, P. Olk, J. **Todorovic**, M. Eriksson, D.L. Dheeraj, A.T.J. **van Helvoort**, B.O. Fimland and H. Weman, “Optical properties of Wurtzite GaAs nanowires”, 4th Meeting of the French GDR "Nanofils Semiconducteurs", Porquerolles, France, 17-21 October, 2011. [talk]

L. Ahtapodov, P. Olk, J. **Todorovic**, T.S. Mjåland, M. Eriksson, P. Bergman, D.L. Dheeraj, A.T.J. **van Helvoort**, B.O. Fimland and H. Weman, “Optical characterization of single semiconductor nanowires.”, 6th NanoLab usermeeting, Trondheim, 16 November, 2011. [talk]

FM Anthonysamy, J **Todorovic**, T Karlberg, ATJ **van Helvoort**, D Dasa, P Olk, B-O Fimland and H Weman, “Consecutive Photoluminescence and Transmission Electron Microscopy Studies of Single GaAs/AlGaAs Core-shell Nanowires with a GaAsSb Insert”, MRS Spring Meeting, San Francisco, California, USA, April 25 - 29, 2011. [talk]

D.L. Dheeraj, A.M. Munshi, D.C. Kim, A.T.J. **van Helvoort**, B.O. Fimland, and H. Weman, “Controlling crystal phases in GaAs nanowires grown by Au- and Ga-assisted MBE”, PDI Topical Workshop on MBE-grown Arsenide Nanowires, Berlin, Germany, 8-9 September 2011. [talk]

E. Eberg, Antonius T.J. **van Helvoort**, S. M. Selbach, B. G. Soleim, E. Folven, P. R. Choudhury, J. Grepstad, C.-B. Eom, T. Grande, R. **Holmestad** and T. Tybell, “Epitaxial perovskite nanostructures: effect of topology and stoichiometry”, 18th International Workshop on Oxide Electronics Napa Valley, California, 26 – 28 September, 2011. [poster]

E. **Eberg**, A. T. J. **van Helvoort**, R. Takahashi, M. Gass, B. Mendis, A. Bleloch, T. Tybell and R. Holmestad, “EELS (and HAADF-STEM) studies of the PbTiO₃ /SrTiO₃ interface in ferroelectric thin films”, 6th International Conference on the Physical Properties and

Application of Advanced MATerials (ICPMAT2011), Shanghai, China, 11-15 October, 2011. [Invited talk]

V.T. Fauske, A.M. Munshi, D.L. Dheeraj, D.C. Kim, B.O. Fimland, H. Weman, and A.T.J. **van Helvoort**, "Cross-sectional Electron Microscopy characterization of the interface between GaAs Nanowires and a Si Substrate", 6th NanoLab usermeeting, Trondheim, 16 November, 2011. [talk]

J. Friis, F. J. H. **Ehlers**, C. D. **Marioara**, S. Dumoulin, K. Marthinsen and R. **Holmestad**. "Multi-scale precipitation modelling for age-hardenable Al-Mg-Si alloys", 1st European Conference on Aluminium Alloys Bremen, 5- 7 October, 2011. [talk]

E. **Garskaite**, A. Svarstad Flø, A. T. J. **van Helvoort**, A. Kareiva, E. Olsen, "Investigation of rare earth doped TiO₂ films and powders produced by the sol gel method using fluorescence hyperspectral imaging technique", Chemistry and Chemical Technology, Kaunas University of Technology (KTU), Kaunas, Lithuania, , 27 April 2011. [poster]

E. **Garskaite**, E. Olsen, A. Svarstad Flø, A. Kareiva, A. Beganskiene, A. T. J. **van Helvoort**, S. Ciorba, and B. S.Richards "Luminescent TiO₂ Films Produced by Sol-Gel Method for Dye Sensitised Solar Cell Applications", The 13th International Conference-School advanced materials and technologies, Palanga, Lithuania, August 27-31, 2011. [poster]

E. **Garskaite**, T. Grande, M.-A. Einarsrud, S. Ciorba, B.S. Richards, M. Lindgren, A .T. J. **van Helvoort** and E. Olsen, "Synthesis and Photoluminscent properties of rare earth doped Al₂O₃ for solar cell applications", 10th Int. Conf. Lithuanian Chemist ("CHEMISTRY 2011"), Vilnius, Lithuania, 14-15 October, 2011. [poster]

E. **Garskaite**, E. Olsen, S. Ciorba, B.S. Richards, A.T.J. **van Helvoort**, A. Zalga and A. Kareiva, "Sol-gel synthesis of rare earth doped oxide materials and their luminescence properties", 20th International Baltic Conference ("MATERIALS ENGINEERING 2011"), Kaunas, Lithuania, 27-28 October 2011. [poster]

Y. Yu, J. Hjelen, and J.K. **Solberg**, "EM Lab Overview Introduction - Characterization of morphology and microstructure of different kinds of materials". The Fourth Chinese–Norwegian Symposium on Light Metals and New Energy; Trondheim, 24-28 October 2011. [talk]

R. Holmestad, R. **Bjørge**, F. J. H. **Ehlers**, K. Matsuda, C. D. **Marioara** and S. J. **Andersen** "Imperfect (and 'perfect'!) precipitates in 6xxx Aluminium Alloys" 6th International Conference on the Physical Properties and Application of Advanced MATerials (ICPMAT2011), Shanghai, China, 11-15 October, 2011. [invited talk]

R. Holmestad, R. **Bjørge**, F. J. H. **Ehlers**, K. Matsuda, C. D. **Marioara** and S. J. **Andersen**, "Imperfect precipitates in 6xxx Aluminium Alloys" EMAG2011, Birmingham, UK, 6-9 September 2011. [invited talk]

H. Kauko, R. **Bjørge**, R. **Holmestad** and A.T.J. **van Helvoort**, "Quantitative HAADF-STEM on heterostructured GaAs nanowires", Scandem 2011, Oulu, Finland, 8-10 June, 2011, [Talk & Poster]

H. Kauko, R. **Bjørge**, R. **Holmestad** and A.T.J. **van Helvoort**, "Quantitative HAADF-STEM on heterostructured nanowires", EMAG2011, Birmingham, UK, 6-9 September 2011. [talk]

H. Kauko, T. Grieb, A. Rosenauer, R. **Bjørge**, M. Munshi, H. Weman and A. T. J. **van Helvoort**, “Composition analysis of heterostructured GaAs nanowires with quantitative HAADF-STEM”, 6th NanoLab usermeeting, Trondheim, 16 November, 2011. [talk]

A. Fervin Moses, J. **Todorovic**, D.L. Dheeraj, P. Olk, A. T. J. **van Helvoort**, B. O. Fimland and H. Weman, “Consecutive optical and structural characterization of a single heterostructured III-V semiconductor nanowire”, 2nd Nano-network Workshop, Oslo, 15-17 June, 2011. [talk]

A. M. F. **Muggerud**, Y. **Li**, E. **Mørtzell** and R. **Holmestad**, ”Precipitation behavior of dispersoids in 3xxx alloys during annealing at low temperatures”, 1st European Conference on Aluminium Alloys Bremen, 5- 7 October, 2011. [talk]

M. Munshi, D.L.. Dasa, J. **Todorovic**, A.T.J. **van helvoort**, B.-O. Fimland and H. Weman, “Insights into Growth Mechanisms of Self-catalyzed GaAs Nanowires Grown by Molecular Beam Epitaxy”, MRS Spring Meeting, San Francisco, California, USA, April 25 - 29, 2011. [poster]

A.M. Munshi, D.C. Kim, D.L. Dheeraj, J. **Todorovic**, A.T.J. **van Helvoort**, B.O. Fimland and H. Weman, “Positioned self-catalyzed GaAs nanowire arrays on Si substrates grown by molecular beam epitaxy”, 2nd Nano-network Workshop, Oslo, 15-17 June, 2011. [poster, won best poster price]

A.M. Munshi, D.L. Dheeraj, A.T.J. **van Helvoort**, B.O. Fimland, and H. Weman, “Crystal phase in Ga-assisted axial heterostructured GaAs/GaAsSb nanowires”, 4th Meeting of the French GDR "Nanofils Semiconducteurs", Porquerolles, France, 17-21 October, 2011. [talk]

A.M. Munshi, D.L. Dheeraj, D.C. Kim, J. **Todorovic**, A.T.J. **van Helvoort**, B.O. Fimland, and H. Weman, “GaAs based heterostructured nanowires on Si: crystal phase, position control and application”, 6th NanoLab usermeeting, Trondheim, 16 November, 2011. [talk]

X. K. Phan, J. **Walmsley**, D. H. Bakhtiary, R. Myrstad, P. Pfeifer, A. Holmen, and H. J. Venvik, "Characterization and Performance of Pd/CeO₂ Catalysts for the Methanol Synthesis as Particles in a Fixed-bed Reaction and as a Coating in a Stacked Foil Microreactor", 2nd Trondheim Gas Technology Conference, Trondheim, 2-3 November 2011. [talk]

E. Rauwel, O. Nilsen, A. Galeckas, **J. Walmsley**, E. Rytter and H. Fjellvåg, “ALD Applied to Conformal Coating of Nanoporous γ -Alumina: Spinel Formation and Luminescence Induced by Europium Doping”, 220th ECS Meeting, Atomic Layer Deposition Applications 7, Boston, MA, USA, 9 – 14 October , 2011. [talk]

R. **Sæterli**, S.M. Selbach, P. Ravindran, T. Grande and R. Holmestad, ”Experimental and theoretical study of the electronic structure of multiferroic BiFeO₃ and related compounds”, Scandem 2011, Oulu, Finland, 8-10 June, 2011, [Talk & Poster]

J. **Todorovic**, A. F. Moses, D. L. Dheeraj, P. Olk, B.-O. Fimland, H. Weman and A. T. J. **van Helvoort**, “Correlated micro-photoluminescence and electron microscopy study of a heterostructured semiconductor nanowire”, Microscopy of Semiconducting Materials 2011 (MSM XVII), Cambridge, UK, 4-7 April 2011. [talk]

V. Panditha, S. G. Daham, J. **Walmsley**, T. T. M. Nguyen, E. Edwin, A. Holmen, D.E .Chen and H. J. Venvik, "Metal dusting corrosion initiation in conversion of natural gas to synthesis gas" 2nd Trondheim Gas Technology Conference, Trondheim, 2-3 November 2011. [talk]

S. **Wenner**, "Computing for stronger aluminium alloys", Fysikermøtet 2011, Oslo, Norway, 20.-22. June 2011. [talk]

S. **Wenner**, M. **Torsæter**, C.D. **Marioara** and R. **Holmestad**, "The Role of Copper in Clustering and Precipitation in Al-Mg-Si-Cu alloys", 1st European Conference on Aluminium Alloys Bremen, 5- 7 October, 2011. [talk]

Book/book chapters

M.A.T.M. Broekmans, A. Korneliussen, A. Muller, E. Roaldset, R.S. Selbekk, C. van der Eijk, C. and A.T.J. **van Helvoort**, Proceedings of the 10th International Congress for Applied Mineralogy (ICAM). Trondheim: International Congress for Applied Mineralogy (ICAM) 2011. (ISBN 978-82-7385-141-3)

Popular science contributions

Randi **Holmestad** in panel of "Abels Tårn" (Radio program), (in Norwegian, date 29/04/11), http://www.blekk.org/index.php?p=ekko_-et_aktuelt_samfunnsprogram

Master/project theses within TEM Gemini Centre

Martin Ervik, "TEM and SEM studies of Al-Mg-Si alloys with respect to corrosion"(Diploma work, June 2011).

Vidar Tonaas Fauske, "Electron Microscopy characterization of the interface between a 111-Si Substrate and GaAs Nanowires grown by Self-Catalysis by MBE" (Diploma work, June 2011).

Fredrik Martinsen, "The effect of natural aging on precipitation hardening in Al-Mg-Si alloys"(Diploma work, June 2011).

Magnus Nord, "Transmission electron microscopy characterisation of quantum dot intermediate band solar cell materials"(Diploma work, June 2011).

Halfdan K. Småbråten "Characterization of precipitates at maximum hardness and overaged conditions in Al-Mg-Si alloys" (Diploma work, June 2011).

Jason Granholt, "Study of microstructure evolution and change of precipitate structure during β'' to post- β'' phase transition" (Project thesis, December 2011).

Eva Maria Gumbmann "Influence of pre-deformation on the age-hardening behavior in an Al-Mg-Si alloy (AA6082)" (Project thesis, December 2011).

Amund Utne, "High Temperature Stability Tests of KK Alloys" (Project thesis, December 2011).

PhD theses in 2011



Ruben Bjørge, Espen Eberg and Malin Torsæter who defended their thesis succesfully in September 2011.

Malin Torsæter, “[Quantitative studies of clustering and precipitation in Al-Mg-Si\(-Cu\) alloys](#)”, Department of Physics, September 2011.

Espen Eberg, “[Interface effects in PbTiO₃ thin films and nanostructures : a transmission electron microscopy study](#)”, Department of Physics, September 2011.

Ruben Bjørge, “[Scanning transmission electron microscopy studies of precipitation in Al-Mg-Ge alloys](#)”, Department of Physics, September 2011.

Ida Westermann: “*Work-hardening behaviour in age-hardenable Al-Zn-Mg(-Cu) alloys*”, Department of Materials Science and Engineering, September 2011.