<u>Curriculum Vitae</u> Dr. Oleg Prymak

Name:	Oleg Prymak
Date of birth:	October 11, 1978
Place of birth:	Kharkiv, Ukraine
Nationality:	German
Family status:	married, three children (Christina 2008, Carina 2011, Robert 2013)
Position:	Senior researcher (*Akad. Oberrat*) Institute of Inorganic Chemistry University of Duisburg-Essen Universitaetsstr. 5-7 45117 Essen, Germany
e-mail:	oleg.prymak@uni-due.de
Homepage:	http://www.uni-due.de/chemie/xrd
Telefon:	+49 (0)201 183 2401
Telefax:	+49 (0)201 183 4195

SCIENTIFIC EXPERIENCE:

01.08.2010 – today

Head of the Facility for X-ray Diffraction at the University of Duisburg-Essen, Faculty of Chemistry (Prof. Dr. M. Epple)

- University lecturer for "Structural Methods": crystallography, XRD, Rietveld method (lectureship of the faculty); managing exercises and seminars in "inorganic chemistry"; MINT-exercises in "pre-course chemistry"
- Organization of the advanced practical course in "inorganic solid-state chemistry" (graduate courses for *M.Sc.* students and student teachers)
- Participation in the organization of the practical course "general chemistry" for students of 1th semester

- Coordination of international exchange programs and scientific projects (DAAD, BMBF)
- Coordinator of the Leonhard-Euler DAAD program with Ukraine (Universities of Lviv, Kyiv, Kharkiv) and Russia (University of Tomsk)
- Radiation protection and deputy library authorized representative of the Faculty of Chemistry

01.11.2015 – today

Senior assistant lecturer (*Akademischer Oberrat*) at the University of Duisburg-Essen, Faculty of Chemistry (Inorganic Chemistry, Prof. Dr. M. Epple)

17.07.2012 – 31.10.2015	**Assistant lecturer** (*Akademischer Rat*) at the University of Duisburg-Essen, Faculty of Chemistry (Inorganic Chemistry, Prof. Dr. M. Epple)
01.08.2010 – 16.07.2012	**Research associate** at the University of Duisburg-Essen, Faculty of Chemistry (Inorganic Chemistry, Prof. Dr. M. Epple)
02.05.2006 – 31.07.2010	**Post-doctoral** fellow at the Max-Planck-Institute for Iron Research (Dusseldorf) at department of Materials Technology by Prof. Dr. G. Frommeyer on *Stability, structural transformations, and properties of Laves-Phases in the ternary systems Nb-TM-Al with TM=Cr, Fe, Co* and department of Microstructure Physics and Alloy Design by Prof. Dr. D. Raabe (from 01.08.2009) on *Boundaries of and influence on the level of impurity of recycled titanium alloys for re-use*
28.09.2005 – 01.05.2006	Scientist at the University of Duisburg-Essen, Faculty of Chemistry, (Inorganic Chemistry, Prof. Dr. M. Epple)

EDUCATION:

27.09.2005	**Graduation** to a Doctor of Natural Sciences (**Dr. rer. nat.**) at the University of Duisburg-Essen with the final mark "very good" (*magna cum laude*); work mark "with Honor" (*summa cum laude*)
01.07.2002 – 27.09.2005	**Doctoral study** under supervision of Prof. Dr. M. Epple at the Ruhr-University Bochum (until 30.09.2003) and the University of Duisburg-Essen, Faculty of Chemistry. PhD thesis on *Investigations of biomaterials and biominerals on the basis of nickel titanium alloys and calcium phosphates*. Scientific assistant for the practical course in inorganic chemistry
01.08.2001 – 30.06.2002	Scientist at the V.N. Karazin Kharkiv National University, Ukraine, Department of Solid State Physics (Prof. Z. Z. Zyman). X-ray practical course, support of X-ray devices and scanning electron microscopy. Scientific assistant for the practical course in solid state physics
01.09.1996 – 30.06.2001	Study of solid state physics (**Diploma** with Honor) at the V.N. Karazin Kharkiv National University, Ukraine. Specialization in biomaterials. Diploma thesis (supervision of Prof. Z.Z. Zyman) on *Production and physical characteristics of two-phase calcium phosphate ceramics*

LANGUAGES:

German	– fluent
English	– fluent
Russian	– fluent
Ukrainian	– native language

PUBLICATIONS:	*h*-index 15, more than 60 articles and 600 citations, author in more than 100 conference presentations and posters Reviewing of *Appl. Surf. Sci., Surf. Coat. Tech., Mater. Chem. Phys., Ceram. Int., J. Cryst. Growth, Materialwiss. Werkstofftechn.*
RESEARCH abroad:	Moscow (10.2004, Prof. T. Oretskaya), Tomsk (05.2012, Prof. Y. Sharkeev, Prof. V. Pichugin), Nanjing (06.2013, Prof. H. Yong), Krakow (10.2013, Prof. J. Chłopek), New York (04.2014, Prof. S. Billinge), Heraklion (07.2014, Prof. M. Chatzinikolaidou), São Paulo (02.2015, Prof. C. Oliveira), New York (10.2015, Prof. S. Billinge), Buenos Aires (04.2016, Prof. L. M. Socolovsky), Notre Dame (05.2016, Prof. Dr. R. Roeder)
AWARDS and GRANTS:	CeNIDE Best **Paper Award** 2008 for J. Mater. Chem. 17 (2007) 721-727; APDIC Best **Paper Award** 2016 for Intermetallics 59 (2015) 43-58; **Research stay** at the University of São Paulo (FAPESP Project 14/10714-3) in February 2015
RESEARCH INTERESTS:	- Development of biomaterials (metals, ceramics, polymers, composites, nanoparticles) and their application in the medicine - Study of biogenic minerals (bones, teeth, snails, etc.) and development of biomimetic materials - Understanding atomic scale structure-property relationships of materials and biominerals with the use of X-ray diffraction
LIST OF PUBLICATIONS:	https://www.uni-due.de/chemie/xrd/englisch/staff
HOBBIES:	Family, sport, music, psychology, traveling
OTHER:	driving license (cars)

Essen, 08.06.2016

List of publications

[67] M.A. Surmeneva, R.A. Surmenev, A. Sharonova, S. Chernousova, O. Prymak, K. Loza, M. Epple, "Incorporation of silver nanoparticles into magnetron-sputtered calcium phosphate layers on titanium as antibacterial coating", *in preparation*

[66] I. Prymak, P. Kollmorgen, N. Kalevaru, A. Martin, O. Prymak, U. Bentrup, S. Wohlrab, "Surface modified Ce-Zr mixed oxide catalysts for the direct synthesis of dimethyl carbonate from methanol and carbon dioxide", *in preparation*

[65] I. Grubova, M. Surmeneva, R. Surmenev, A. Ivanova, V. Shugurov, N. Koval, K. Kravchuk, O. Prymak, M. Epple, "Comparative evaluation of the sand blasting, acid etching and electron beam surface treatments of titanium for medical application", *submitted (2016)*

[64] Z.Z. Zyman, M. Epple, A. Goncharenko, D. Rokhmistrov, O. Prymak, K. Loza, "The thermal behavior of precipitated amorphous calcium phosphates The thermal behavior of precipitated amorphous calcium phosphates with an initial Ca/P ratio of 1:1", *submitted (2016)*

[63] J. Helmlinger, O. Prymak, K. Loza, M. Gocyla, M. Heggen, M. Epple, "On the crystallography of silver nanoparticles with different shapes", **Cryst**al **Growth Des**ign (2016) DOI: 10.1021/acs.cgd.6b00178

[62] I. Schmitz, O. Prymak, M. Epple, C. Ernert, A. Tannapfel, "Squamous cell carcinoma in association with a red tattoo", **J**ournal der **D**eu**tsch**en **Dermatol**ogischen **Ges**ellschaft **14**/6 (2016) 604-609

[61] T. Knoche, R. Lund, O. Prymak, M. Epple, M. Ulbricht, "Effect of annealing temperature on pore formation in preparation of advanced polyethylene battery separator membranes", **Mater**ials **Today Commun**ications **8** (2016) 23-30

[60] D.S. Syromotina, R.A. Surmenev, M.A. Surmeneva, A.N. Boyandin, E.D. Nikolaeva, O. Prymak, M. Epple, M. Ulbricht, C. Oehr, T.G. Volovac, "Surface wettability and energy effects on the biological performance of poly-3-hydroxybutyrate films treated with RF plasma", **Mat**erials **Sci**ence & **Eng**ineering **C 62** (2016) 450–457

[59] V. Nosenko, N. Strutynska, I. Vorona, I. Zatovsky, V. Dzhagan, S. Lemishko, M. Epple, O. Prymak, N. Baran, S. Ishchenko, N. Slobodyanik, Y. Prylutskyy, N. Klyui, V. Temchenko, "Structure of coatings produced from carbonate-containing hydroxyapatite by detonation spraying", **Nanoscale Res**earch **Lett**ers **10** (2015) 464

[58] O. Livitska, N. Strutynska, I. Zatovsky, I. Nikolenko, N. Slobodyanik, Y. Prylutskyy, M. Epple, O. Prymak, A. Byeda, "Copper(II), zinc(II) and copper(II)/zinc(II)-containing carbonate-substituted hydroxyapatite: synthesis, characterization and thermal behaviour", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **47** (2016) 2-3

[57] A.A. Ivanova, M.A. Surmeneva, A.I. Tyurin, T.S. Pirozhkova, I.A. Shuvarin, O. Prymak, M. Epple, M.V. Chaikina, R.A. Surmenev, "Fabrication and physico-mechanical properties of thin magnetron sputter deposited silver-containing hydroxyapatite films", **Appl**ied **Surf**ace **Sci**ence **360** (2016) 929-935

[56] C. Hadjicharalambous, O. Prymak, K. Loza, A. Buyakov, S. Kulkov, M. Chatzinikolaidou, "Effect of porosity of alumina and zirconia ceramics towards pre-osteoblast response", **Front**iers in **Bioeng**ineering and **Biotechnol**ogy **3**/175 (2015) 1-10

[55] M.A. Surmeneva, C. Kleinhans, G. Vacun, P.J. Kluger, V. Schönhaar, M. Müller, S.B. Hein, A. Wittmar, M. Ulbricht, O. Prymak, C. Oehr, R.A. Surmenev, "Nano-hydroxyapatite-coated metal-ceramic composite of iron-tricalcium phosphate: Improving the surface wettability, adhesion and proliferation of mesenchymal stem cells in vitro", **Colloid**s and **Surface**s **B**: Biointerfaces **135** (2015) 386-393

[54] G. Bendt, A. Weber, S. Heimann, O. Prymak, W. Assenmacher, S. Schulz, "Wet-chemical Synthesis of Bi_2Te_3 Nanoparticles using Metal organic Precursors - Single Source vs. Dual Source Approach", **Dalton Trans**actions **44** (2015) 14272-14280

[53] V.F. Korshak, Y.A. Shapovalov, O. Prymak, A.P. Kryshtal, R.L. Vasilenko, "Structural changes in Bi-43 wt % Sn eutectic alloy under superplastic deformation", **Phys**ics of **Met**als and **Metallogr**aphy **116/8** (2015) 829-837

[52] S. Ristig, O. Prymak, K. Loza, M. Gocyla, W. Meyer-Zaika, M. Heggen, D. Raabe, M. Epple, "Nanostructure of wet-chemically prepared, polymer-stabilized silver-gold nanoalloys over the entire composition range", **J**ournal of **Mater**ials **Chem**istry **B 3** (2015) 4654-4662

[51] S. Heimann, W. Assenmacher, O. Prymak, S. Schulz, "Synthesis of binary Sb_2E_3 (E = S, Se) and ternary $Sb_2(S,Se)_3$ nanowires using tailor-made single source precursors", **Eur**opean **J**ournal of **Inorg**anic **Chem**istry **14** (2015) 2407-2415

[50] C. Hadjicharalambous, E. Mygdali, O. Prymak, A. Buyakov, S. Kulkov, M. Chatzinikolaidou, "Proliferation and osteogenic response of MC3T3-E1 pre-osteoblastic cells on porous zirconia ceramics stabilized with magnesia or yttria", **J**ournal of **Biomed**ical **Mater**ials **Res**earch Part **A 103**/11 (2015) 3612-3624

[49] A.A. Ivanova, R.A. Surmenev, M.A. Surmeneva, T. Mukhametkaliyev, K. Loza, O. Prymak, M. Epple, "Hybrid biocomposite with a tunable antibacterial activity and bioactivity based on rf magnetron sputter deposited coating and silver nanoparticles", **Appl**ied **Surf**ace **Sci**ence **329** (2015) 212-218

[48] F. Stein, C. He, O. Prymak, S. Voß, I. Wossack, "Phase equilibria in the Fe-Al-Nb system: Solidification behaviour, liquidus surface and isothermal sections", **Intermetallics 59** (2015) 43-58

[47] I.Y. Grubova, M.A. Surmeneva, A.A. Ivanova, K. Kravchuk, O. Prymak, M. Epple, Y.P. Sharkeev, V. Buck, R.A. Surmenev, "The effect of patterned titanium substrates on the properties of silver-doped hydroxyapatite coatings", **Surf**ace and **Coatings Technol**ogy **276** (2015) 595-601

[46] O.S. Bezkrovnyi, N.A. Matveevskaya, Yu.V. Yermolayeva, A.V. Tolmachev, O. Prymak, M. Epple, V.N. Baumer, "Synthesis, morphology and structure of the dense $(Y_{1-x}Eu_x)_2O_3$ spherical shape particles", **Cryst**al **Res**earch & **Technol**ogy **50** (2015) 621-625

[45] A. Lübke, J. Enax, K. Loza, O. Prymak, P. Gaengler, H.-O. Fabritius, D. Raabe, M. Epple, "Dental lessons from past to present: ultrastructure and composition of teeth from plesiosaurs, dinosaurs, extinct and recent sharks, **RSC Adv**ances **5** (2015) 61612-61622

[44] N. Strutynska, I. Zatovsky, N. Slobodyanik, A. Malyshenko, Y. Prylutskyy, O. Prymak, I. Vorona, S. Ishchenko, N. Baran, A. Byeda, A. Mischanchuk, "Preparation, characterization and thermal transformation of sodium and carbonate-substituted poorly crystalline calcium phosphate", **Eur**opean **J**ournal of **Inorg**anic **Chem**istry **4** (2015) 622-629

[43] O.S. Bezkrovnyi, Yu.V. Yermolayeva, V.V. Yanovskii, N.A. Dulina, O. Prymak, V.N. Baumer, N.I. Danilenko, A.V. Tolmachev, "Structure and morphology of spherical crystalline $(Y_{1-x}Eu_x)_2O_3$ particles", **Inorg**anic **Mater**ials 51 (2015) 51-56

[42] N. Strutynska, N. Slobodyanik, A. Malyshenko, I. Zatovsky, I. Vorona, Y. Prylutskyy, O. Prymak, N. Baran, S. Ishchenko, V. Nosenko, "Synthesis, Characterization and EPR Investigation of γ-Induced Defects of Nanoparticles of (MI, CO_3)-Containing Apatites (MI – Na, K)", **OMEE** conference paper (2014) 136309, **Solid State Phenom**ena 230 (2015) 133-139

[41] M. Chakif, O. Prymak, M. Slota, E. Heintze, E. L. Gurevich, C. Esen, L. Bogani, M. Epple, A. Ostendorf, "Impact of solvent mixture on iron nanoparticles generated by laser ablation", Progress in Biomedical Optics and Imaging - **Proc**eedings of **SPIE** 8955 (2014) 895507-1

[40] M. Surmeneva, R. Surmenev, Y. Nikonova, I. Selezneva, A. Ivanova, V. Putlyaev, O. Prymak, M. Epple, "Fabrication, ultra-structure characterization and in vitro studies of RF magnetron sputter deposited nano-hydroxyapatite thin films **for** biomedical applications", **Appl**ied **Surf**ace **Sci**ence **317** (2014) 172-180

[39] A.A. Ivanova, R.A. Surmenev, M.A. Surmeneva, T. Mukhametkaliyev, A.A. Sharonova, I.Y. Grubova, K. Loza, S. Chernousova, O. Prymak, M. Epple, "Antibacterial AgNPs/CaP biocomposites", **IFOST** conference paper 6991166 (2014) 472-474

[38] I. Prymak, V.N. Kalevaru, S. Wohlrab, O. Prymak, A. Martin, "Impact of calcination temperature on the catalytic properties of Ce-Zr-O solids in the direct synthesis of diethyl carbonate from ethanol and CO_2", **DGMK**-Tagungsbericht **3** (2014) 211-219

[37] M. Chakif, A. Essaidi, E. Gurevich, A. Ostendorf, O. Prymak, M. Epple, "Generation of NiTi-nanoparticles by femtosecond laser ablation in liquid", **J**ournal of **Mater**ials **Eng**ineering and **Perform**ance **23**/7 (2014) 2482-2486

[36] S. Banerjee, K. Loza, W. Meyer-Zaika, O. Prymak, M. Epple, "Structural evolution of silver nanoparticles during wet-chemical synthesis", **Chem**istry of **Mater**ials **26** (2014) 951-957

[35] A.I. Malyshenko, N.Yu. Strutynska, I.V. Zatovsky, N.S. Slobodyanik, M. Epple, O. Prymak, "Synthesis of Na^+, CO_3^{2-}-containing calcium phosphate nanoparticles and their thermal transformations", **Funct**ional **Mater**ials **21** (2014) 333-337

[34] S. Schulz, S. Heimann, K. Kaiser, O. Prymak, W. Assenmacher, J. Brüggemann, B. Mallick, A.-V. Mudring, "Solution-based synthesis of GeTe octahedra at low temperature", **Inorg**anic **Chem**istry **52** (2013) 14326-14333

[33] J. Enax, H. O. Fabritius, A. Rack, O. Prymak, D. Raabe, M. Epple, "Characterization of crocodile teeth: Correlation of composition, microstructure, and hardness", **J**ournal of **Struct**ural **Biol**ogy **184** (2013) 155-163

[32] A.A. Ivanova, M.A. Surmeneva, I.Y. Grubova, A.A. Sharonova, V.F. Pichugin, M.V. Chaikina, V. Buck, O. Prymak, M. Epple, R.A. Surmenev, "Influence of the substrate bias on the stoichiometry andstructure of RF-magnetron sputter-deposited silver containing calcium phosphate coatings", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **44** (2013) 218-225

[31] Y.P. Sharkeev, A.Y. Eroshenko, K.S. Kulyashova, S.V. Fortuna, K.A. Suvorov, M. Epple, O. Prymak, V. Sokolova, S. Chernousova, "Microstructure, mechanical and biological properties of zirconium alloyed with niobium after severe plastic deformation", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **44** (2013) 198-204

[30] A.A. Sharonova, R.A. Surmenev, M.A. Surmeneva, A.A. Ivanova, I.Y. Grubova, W.F. Pichugin, M. Epple, O. Prymak, "Structural properties of silver-containing hydroxyapatite coatings, prepared by rf magnetron sputtering" **Izv**estiya **Vuz**ov, **Fizika** (in Russian) **12**/2 (2013) 240-246; cover-to-cover translation: **Russ**ian **Phys**ical **J**ournal (in English) (2014)

[29] D.S. Syromotina, M.A. Surmeneva, S.N. Gorodzha, V.F. Pichugin, A.A. Ivanova, I.Y. Grubova, K.S. Kravchuk, K.V. Gogolinsky, O. Prymak, M. Epple, R.A. Surmenev, "Physical-mechanical characteristics of RF magnetron sputter-deposited coatings based on silver-doped hydroxyapatite", **Izv**estiya **Vuz**ov, **Fizika** (in Russian) **10** (2013) 85-91; cover-to-cover translation: **Russ**ian **Phys**ical **J**ournal (in English) **56**/10 (2014) 1198-1205

[28] S.N. Goroja, M.A. Surmeneva, R.A. Surmenev, M.V. Gribennikov, V.F. Pichugin, A.A. Sharonova, A.A. Pustovalova, O. Prymak, M. Epple, A. Wittmar, M. Ulbricht, K.V. Gogolinsky, K.S. Kravchuk, "Wettability of thin silicate-containing hydroxyapatite films formed by RF-Magnetron Sputtering", **Izv**estiya **Vuz**ov, **Fizika** (in Russian) **10** (2013) 54-59; cover-to-cover translation: **Russ**ian **Phys**ical **J**ournal (in English) **56**/10 (2014) 1163-1169

[27] E.V. Legostaeva, Y.P. Sharkeev, M. Epple, O. Prymak, "Structure and properties of micro-arc calcium phosphate coatings deposited on a surface of titanium and zirconium alloys", **Izv**estiya **Vuz**ov, **Fizika** (in Russian) **10** (2013) 23-28; cover-to-cover translation: **Russ**ian **Phys**ical **J**ournal (in English) **56**/10 (2014) 1130-1136

[26] O. Prymak, S. Ristig, W. Meyer-Zaika, A. Rostek, L. Ruiz, J.M. Gonzalez-Calbet, M. Vallet-Regi, M. Epple, "X-ray powder diffraction as a tool to investigate the ultrastructure of nanoparticles", **Izv**estiya **Vuz**ov, **Fizika** (in Russian) **10** (2013) 5-9; cover-to-cover translation: **Russ**ian **Phys**ical **J**ournal (in English) **56**/10 (2014) 1111-1115

[25] M.A. Surmeneva, R.A. Surmenev, V.F. Pichugin, N.N. Koval, A.D. Teresov, A.A. Ivanova, I.Y. Grubova, V.P. Ignatov, O. Prymak, M. Epple, "Adhesion properties of a silicon-containing calcium phosphate coating deposited by RF magnetron sputtering on a heated substrate", **J**ournal of **Surf**ace **Investig**ation. **X-ray**, **Synchro**tron and Neutron Techniques **7** (2013) 944-951

[24] M.A. Surmeneva, A. Kovtun, A. Peetsch, S.N. Goroja, A.A. Sharonova, V.F. Pichugin, I.Y. Grubova, A.A. Ivanova, A.D. Teresov, N.N. Koval, V. Buck, A. Wittmar, M. Ulbricht, O. Prymak, M. Epple, R.A. Surmenev, "Preparation of a silicate-containing hydroxyapatite-based coating by magnetron sputtering: structure and osteoblast-like MG63 cells in vitro study", **RSC Adv**ances **3** (2013) 11240–11246

[23] M.A. Surmeneva, M.V. Chaikina, V.I. Zaikovskiy, V.F. Pichugin, V. Buck, O. Prymak, M. Epple, R.A. Surmenev, "The structure of an RF-magnetron sputter-deposited silicate-containing hydroxyapatite-based coating investigated by high-resolution techniques", **Surf**ace and **Coatings Technol**ogy **218** (2013) 39-46

[22] J. Enax, O. Prymak, D. Raabe, M. Epple, "Structure, composition, and mechanical properties of shark teeth", **J**ournal of **Struct**ural **Biol**ogy **178** (2012) 290-299

[21] O. Prymak, F. Stein, "The ternary Cr-Al-Nb phase diagram: Experimental investigations of isothermal sections at 1150, 1300 and 1450 °C", **J**ournal of **Alloys** and **Comp**oun**d**s **513** (2012) 378-386

[20] O. Dovbenko, F. Stein, M. Palm, O. Prymak, "Experimental determination of Co-Al-Nb phase diagram", **Intermetallics 18** (2010) 2191-2207

[19] O. Prymak and F. Stein, "Solidification and high-temperature phase equilibria in the Fe-Al-rich part of the Fe-Al-Nb system", **Intermetallics 18** (2010) 1322-1326

[18] O. Prymak, F. Stein, A. Kerkau, A. Ormeci, G. Kreiner, G. Frommeyer, D. Raabe, "Phase equilibria in the ternary Nb-Cr-Al system and site occupation in the hexagonal C14 Laves phase $Nb(Al_xCr_{1-x})_2$", **Mater**ials **Res**earch **Soc**iety **Symp**osium **Proc**eeding **1128** (2009) U08-11, DOI: 10.1557/PROC-1128-U08-11

[17] V.F. Pichugin, R.A. Surmenev, E.V. Shesterikov, M.A. Ryabtseva, E.V. Eshenko, S.I. Tverdokhlebov, O. Prymak, M. Epple, "The preparation of calcium phosphate coatings on titanium and nickel-titanium by rf-magnetron-sputtered deposition: composition, structure and micromechanical properties", **Surf**ace and **Coatings Technol**ogy **202** (2008) 3913-3920

[16] J.C. Marxen, O. Prymak, F. Beckmann, F. Neues, M. Epple, "Embryonic shell formation in the snail Biomphalaria glabrata: A comparison between scanning electron microscopy (SEM) and synchrotron radiation micro computer tomography (SRμCT)", **J**ournal of **Mollus**can **Stud**ies **74** (2008) 19-26

[15] T. Peitsch, A. Klocke, B. Kahl-Nieke, O. Prymak, M. Epple, "The release of nickel from orthodontic NiTi wires is strongly increased by dynamic mechanical loading but not constrained by surface nitridation", **J**ournal of **Biomed**ical **Mater**ials **Res**earch **82A** (2007) 731-739

[14] V. Sokolova, A. Kovtun, O. Prymak, W. Meyer-Zaika, E. A. Kubareva, E. A. Romanova, T. S. Oretskaya, R. Heumann, M. Epple, "Functionalisation of calcium phosphate nanoparticles by oligonucleotides and their application for gene silencing", **J**ournal of **Mater**ials **Chem**istry **17** (2007) 721-727

[13] M. Köller, S. A. Esenwein, D. Bogdanski, O. Prymak, M. Epple, G. Muhr, "Regulation of leukocyte adhesion molecules by leukocyte/biomaterial-conditioned media: A study with calcium-phosphate-coated and non-coated NiTi-shape memory alloys", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **37** (2006) 558-562

[12] S. Vanis, O. Rheinbach, A. Klawonn, O. Prymak, M. Epple, "Numerical computation of the porosity of bone substitution materials from synchrotron micro computer tomographic data", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **37** (2006) 469-473

[11] V. Sokolova, O. Prymak, W. Meyer-Zaika, H. Cölfen, H. Rehage, A. Shukla, M. Epple, "Synthesis and characterisation of DNA-functionalised calcium phosphate nanoparticles with multiple shells", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **37** (2006) 441-445

[10] O. Prymak, V. Sokolova, T. Peitsch, M. Epple, "The crystallization of fluoroapatite dumbbells from supersaturated aqueous solution", **Cryst**al **Growth** & **Des**ign **6** (2006) 498-506

[9] L. Krone, J. Mentz, M. Bram, H.P. Buchkremer, D. Stöver, M. Wagner, G. Eggeler, D. Christ, S. Reese, D. Bogdanski, M. Köller, S.A. Esenwein, G. Muhr, O. Prymak, M. Epple, "The potential of powder metallurgy for the fabrication of biomaterials on the basis of nickel-titanium: A case study with a staple showing shape memory behaviour", **Adv**anced **Eng**ineering **Mater**ials **7** (2005) 613-619

[8] O. Prymak, H. Tiemann, I. Soetje, J. C. Marxen, A. Klocke, B. Kahl-Nieke, F. Beckmann, T. Donath, M. Epple, "Application of synchrotron-radiation-based computer microtomography to selected biominerals: embryonic snails, statoliths of medusae, and human teeth" **J**ournal of **Biol**ogical **Inorg**anic **Chem**istry **10** (2005) 688-695

[7] O. Prymak, D. Bogdanski, M. Köller, S.A. Esenwein, G. Muhr, F. Beckmann, T. Donath, M. Assad, M. Epple, "Morphological characterization and in vitro biocompatibility of a porous nickel-titanium alloy", **Biomaterials 26** (2005) 5801-5807

[6] A. Becker, I. Sötje, C. Paulmann, F. Beckmann, T. Donath, R. Boese, O. Prymak, H. Tiemann, M. Epple, "Calcium sulphate hemihydrate is the inorganic mineral in statoliths of scyphozoan medusae (Cnidaria)", **Dalton Trans**actions 2005, 1545-1550

[5] O. Prymak, D. Bogdanski, S.A. Esenwein, M. Köller, M. Epple, "NiTi shape memory alloys coated with calcium phosphate by plasma-spraying. Chemical and biological properties", **Mat**erial**wiss**enschaft **u**nd **Werkstofftech**nik **35** (2004) 346-351

[4] D. Bogdanski, S.A. Esenwein, O. Prymak, M. Epple, G. Muhr, M. Köller, "Inhibition of PMN apoptosis after adherence to dip-coated calcium phosphate surfaces of a shape memory alloy", **Biomaterials 25** (2004) 4627-4632

[3] D. Bogdanski, M. Epple, S.A. Esenwein, G. Muhr, V. Petzoldt, O. Prymak, K. Weinert, M. Köller, "Biocompatibility of calcium phosphate-coated and of geometrically structured Nickel-Titanium (NiTi) by *in-vitro* testing methods", **Mat**erials **Sci**ence and **Eng**ineering **A 378** (2003) 527-531

[2] O. Prymak, A. Klocke, B. Kahl-Nieke, M. Epple, "Fatigue of orthodontic Nickel-Titanium (NiTi) wires in different fluids under constant mechanical stress", **Mat**erials **Sci**ence and **Eng**ineering **A 378** (2003) 110-114

[1] Z. Zyman, N. Tkatschenko, W. Gluschko, E. Shurinowa, O. Prymak, "Synthesis of two-phase calcium phosphate ceramics with defined phase composition", communications of the W.N. Karasin national university of Kharkiv "**Phys**ics" (in Russian) **516** (2001) 133-136

Selected conference presentations

[14] *24th Annual Meeting of the German Crystallographic Society (DGK)*, Stuttgart, 14.-17.03.2016, O. Prymak, J. Helmlinger, K. Loza, M. Heggen, M. Epple, "X-ray powder diffraction as a tool to analyze the shape of silver nanoparticles with different morphologies"

[13] *27th European Conference on Biomaterials*, Krakow, 30.08.-03.09.2015, O. Prymak, S. Ristig, S. Chernousova, W. Meyer-Zaika, M. Epple "Physicochemical properties and cell-biological action of alloyed silver-gold nanoparticles"

[12] *XXIV Conference on Biomaterials in Medicine and Veterinary Medicine*, Rytro, 09.-12.10.2014, O. Prymak, S. Ristig, W. Meyer-Zaika, D. Raabe, M. Epple "Microstructure and properties of alloyed silver-gold nanoparticles"

[11] *Russian-German Workshop "Biocompatible Materials and Coatings: Fundamental Problems & Trends, Biomedical Applications"*, Tomsk, 24.-27.02.2013, O. Prymak, S. Banerjee, K. Loza, W. Meyer-Zaika, M. Epple "X-ray powder diffraction as tool to investigate the ultrastructure of nanoparticles"

[10] *4th International Kazan innovation nanotechnology forum (NANOTECH)*, Kazan, 27.-29.11.2012, Network NanoBRIDGE (founded by BMBF), O. Prymak, M. Epple, "Biomaterials: From the centimeter to the nanometer scale"

[9] *XIX Mendeleev Congress on General and Applied Chemistry*, Wolgograd, 25.-30.09.2011, O. Prymak, J. Enax, M. Epple "Crystallographic and structural aspects of shark teeth"

[8] *European Powder Diffraction Conference (EPDIC)*, Darmstadt, 27.-30.08.2010, O. Prymak, F. Stein "Preferential site occupations in the hexagonal C14 $Nb(Cr,Al)_2$ Laves Phase"

[7] *Sino-German Symposium*, Aachen, 08.-12.06.2009, F. Stein, O. Prymak, O. Dovbenko, C. He, M. Palm, J. C. Schuster "Investigation of phase diagrams of Laves phase containing binary and ternary Nb-TM(-Al) systems with TM = Cr, Fe, Co"

[6] *2008 MRS Fall Meeting*, Boston, 01.-05.12.2008, O. Prymak, F. Stein, A. Kerkau, A. Ormeci, G. Kreiner, G. Frommeyer, D. Raabe, "Phase equilibria in the ternary Nb-Cr-Al system and site occupation in the hexagonal C14 Laves phase $Nb(Cr,Al)_2$"

[5] *European Congress on Advanced Materials and Processes* (EUROMAT), Nürnberg, 10.-13.09.2007, O. Prymak, F. Stein, G. Frommeyer, D. Raabe "Laves Phases in the Ternary Nb-Cr-Al System: Phase Equilibria at 1150, 1300, and 1450 °C"

[4] *2006 MRS Spring Meeting*, San Francisco, 17.-21.04.2006, O. Prymak, D. Bogdanski, M. Koeller, S. A. Esenwein, G. Muhr, F. Beckmann, T. Donath, M. Assad, M. Epple, "Morphological characterization and *in vitro* biocompatibility of a porous nickel-titanium alloy"

[3] *Jahrestagung der Deutschen Gesellschaft für Biomaterialien*, Würzburg, 07.-08.10.2005, T. Peitsch, O. Prymak, A. Klocke, B. Kahl-Nieke, M. Epple, "Ermüdungsbeständigkeit und Nickelfreisetzung von orthodontischen Drähten auf NiTi-Basis (Nitinol®)"

[2] *International conference on biocompatible shape memory materials and new techniques in medicine*, Tomsk, 17.-19.05.2004, O. Prymak, D. Bogdanski, S.A. Esenwein, M. Köller, G. Muhr,

M. Epple, "Coating of nickel–titanium alloys with calcium phosphate by dip-coating and plasma-spraying"

[1] *European Symposium on Martensitic Transformation and Shape-Memory (ESOMAT)*, Cirencester, 17.-22.08.2003, M. Epple, B. Kahl-Nieke, A. Klocke, O. Prymak, "Corrosion of orthodontic Nickel-Titanium (NiTi) wires in different fluids under constant mechanical stress"