

Programme

HTSMAs 2018

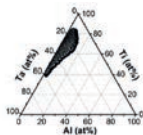
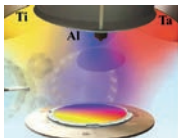
2nd International Conference on

High Temperature Shape Memory Alloys

From Basics to Applications

15 - 18 May 2018

Irsee, Germany



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Leibniz
Universität
Hannover

<https://htsmas2018.dgm.de>

DGM

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Welcome Note

There is growing interest from academia and industry in high-temperature shape memory alloys, as these represent a fascinating field both from a basic science and an application point of view. Recent literature demonstrates that substantial progress has been made since the first conference exclusively devoted to this topic.

In fact, some of the materials developed lately, are already very attractive in terms of microstructural stability, reversible transformation strain and price of the constituents. Yet, the field is still rapidly evolving and the impact of new concepts such as high entropy alloys is not even clear yet. Thus, there is again a need to bring together the leading experts in order to advance the field and to bridge the gap „From Basics to Applications“.

The 2nd Conference on **High Temperature Shape Memory Alloys** will provide a setting for all those interested in basic aspects and applications of high temperature shape alloys. There will be ample time to exchange ideas and discuss the latest research. The conference is expected to shed new light on the different aspects of the processing-microstructure-property relationships, characterisation, testing, and modelling and last but not least on applications of high temperature shape memory alloys.

We look forward to seeing you in Irsee 2018!



Hans J. Maier
Institut für Werkstoffkunde (Materials Science),
Leibniz Universität Hannover

Conference Chair



General Information

Conference Venue

The symposium will take place in the Irsee Monastery Swabian Conference and Educational Centre.

Kloster Irsee
Klosterring 4
D-87660 Irsee
T+49 (0) 8341 906-00
F+49 (0) 8341 74278
info@kloster-irsee.de
www.kloster-irsee.de

The abbey is located on the foothills of the Alps, the small, idyllic market town of Irsee offers a favourable starting point for walks, hikes and trips into historic Swabia or into the Allgäu with its mountains, castles and lakes.

Conference Chair

Hans J. Maier
Institut für Werkstoffkunde (Materials Science),
Leibniz Universität Hannover

Conference Organization

Deutsche Gesellschaft für Materialkunde e.V.
c/o INVENTUM GmbH
Alexia Ploetz
Marie-Curie-Straße 11 - 17
D-53757 Sankt Augustin
(Germany)
T +49 (151) 2122 7448

Conference Website

<https://htsmas2018.dgm.de>

Conference Language

The official conference language will be English.

Proceedings

The abstracts presented at the conference will be published electronically on the conference website <https://htsmas2018.dgm.de>.

Postersession

The postersession will be held on Wednesday 16 May 2018 starting at 19:30 in the lecture room.

The Posterevening gives authors the opportunity to discuss their subject with delegates and answer questions in front of their poster.

Beverages and Snacks will be offered during the Poster Evening.

The best three poster will be awarded a prize. The prizes will be announced during the conference dinner.

Conference Dinner

On Thursday 17 May 2018, all participants are invited to take part in the conference dinner at the picturesque restaurant „Katzbrui Mühle“.
Adress:
Katzbrui-Mühle
Katzbrui 7
D-87742 Köngetried
(Germany)
info@katzbrui-muehle.de
www.katzbrui-muehle.de

Conference Fees

Young Researchers up to 30 years
DGM members* 260 EUR
DGM basic members 300 EUR
Non-members 340 EUR

Expert Researchers 31-40 years
DGM members* 480 EUR
DGM basic members 520 EUR
Non-members 560 EUR

Professionals University
DGM members* 660 EUR
DGM basic members 700 EUR
Non-members 740 EUR

Industry
DGM members* 870 EUR
DGM basic members 910 EUR
Non-members 950 EUR

* Deutsche Gesellschaft für Materialkunde e.V. (DGM) / German Materials Society
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Programme Committee & Topics



Ralf Drautz,
Ruhr-Universität Bochum
(Germany)



Gunther Eggeler,
Ruhr-Universität Bochum
(Germany)



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Alfred Ludwig,
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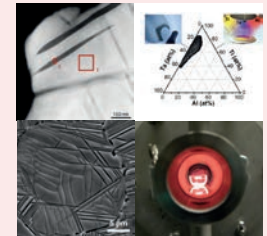
Wolfgang Schmahl,
Ludwig-Maximilians-Universität München
(Germany)



Christoph Somsen,
Ruhr-Universität Bochum
(Germany)

Topics

- Constitution and Alloy Development
- Processing
- Characterization and Testing
- Functional and Structural Degradation
- Modeling
- Applications



Overview Tuesday

Tuesday, 15 May 2018

10:00 **Registration**

11:00 **Welcome Reception**

12:15 **Opening Ceremony**
H. J. Maier, Leibniz Universität Hannover (Germany)

12:40 **Plenary Lecture**

H. Karaca Tailoring the Behavior of NiTiHf Alloys Fabricated by Conventional and Selective Laser Melting Methods

Session **B: Processing**

13:30 J. Frenzel Processing and functional stability of Ti-Ta-based high temperature shape memory alloys

Session **D: Functional and Structural Degradation**

13:55 D. Langenkämper On the Oxidation Behavior and its Influence on the Martensitic Transformation of Ti-Ta High Temperature Shape Memory Alloys

14:20 **Coffee Break**

Session **E: Modeling**

15:00 A. Ferrari Ab-initio calculations of the stability and transformation temperature in Ti-Ta-X HTSMAs

15:25 H. Chauke Martensitic transformation of TiPd-X as potential high temperature shape memory alloys (X=Ru, Ni, Au, OS)

Session **B: Processing**

15:50 E. Karsten High temperature extrusion of a multicrystalline Co-Ni-Ga High-Temperature Shape Memory Alloy and its influence on the microstructure and functional properties

Session **C: Characterization and Testing**

16:15 A. Reul In situ neutron diffraction analyzing stress-induced phase transformation and martensite elasticity in [001]-oriented CoNiGa shape memory alloy single crystals

16:40 V. Lvov Strong influence of small volume change on superelastic deformation of high-temperature shape memory alloys

17:05 P. Pavlov High Temperature Nanoindentation for Characterizing Shape Memory Materials up to 800°C

Overview Tuesday & Wednesday

17:30 ID 50 C. Somsen Diffraction investigations on the omega phase in Ti75Ta25 high temperature shape memory alloy by synchrotron radiation and transmission electron microscopy

19:30 **Postersession**

Wednesday, 16 May 2018

Session **B: Processing**

09:00 J. Pilch Functional characterization of nitinol-hafnium wire for use in high speed, high temperature actuators

09:25 N. Babacan The influence of cold and warm rolling on the thermo-mechanical behavior of near-equiatomic NiTiHf20 high-temperature shape memory alloy

Session **C: Characterization and Testing**

09:50 H.O. Tugrul The Effect of Severe Plastic Deformation to the Shape Memory Properties of Ni50Ti30Hf20 High Temperature Shape Memory Alloy During Heating-Cooling Cycles Under Constant High Stress Magnitudes

10:15 J. San Juan Núñez Thermo-Elastic Behaviour of the Martensitic Transformation in Ti-Ni-Hf High-Temperature Shape Memory Alloys

Session **D: Functional and Structural Degradation**

10:40 H.H. Saygili Investigating The Effect Of Aging Heat Treatment On The Functional Fatigue Behavior Of Ni50.3Ti29.7Hf20 High Temperature Shape Memory Alloy

11:05 **Coffee Break**

Session **D: Functional and Structural Degradation**

11:45 B. Kockar Functional Fatigue Behavior of Severe Plastically Deformed Ni50Ti30Hf20 High Temperature Shape Memory Alloy

12:10 R. Santamarta Thermal and mechanical behavior of Ni-rich Ni-Ti-Hf/Zr HTSMA after aging near their working temperatures

Session **A: Constitution and Alloy Development**

12:35 J. San Juan Núñez Thermo-Mechanical Behaviour of Cu-Al-Ni High-Temperature Shape Memory Alloys

13:00 **Lunch Break**

14:00 **Excursion**

Overview Wednesday & Thursday

Thursday, 17 May 2018

| | | |
|---------|---|---|
| 09:00 | Plenary Lecture | |
| | P. Šittner | Phase transformations in NiTi at high stresses and temperatures - beyond the strain recoverability limits |
| Session | E: Modeling | |
| 09:50 | P. Sedláč | Simulation of coupled transformation and plasticity in NiTi at elevated temperatures and stresses |
| Session | D: Functional and Structural Degradation | |
| 10:15 | A. Pérez Checa | Ni-Mn-Ga high temperature shape memory alloys: Function stability in beta and beta + gamma regions |
| 10:40 | Coffee Break | |
| Session | A: Constitution and Alloy Development | |
| 11:15 | D. Piorunek | On the strong dependence of transformation temperatures on alloy composition in Ni-Ti and Ni-Ti-Hf shape memory alloys |
| 11:40 | G. Firstov | Structure and properties of „pseudo NiTi“ and „pseudo NiAl“ multi-component high entropy shape memory intermetallics |
| 12:05 | J. Frenzel | Optimizing Ni-Ti for Ferrocic Cooling |
| 12:35 | Lunch Break | |
| Session | N: Characterization and Testing | |
| 13:45 | E. Alarcon Tarquino | Phenomenological Study of the Shape Setting of NiTi Wires |
| Session | A: Constitution and Alloy Development | |
| 14:10 | T. Kosorukova | Interatomic interaction in multi-component intermetallic compounds with approximate B2 structure: (TiZrHf) ₅₀ (CoNiCu) ₅₀ example |
| 14:35 | Yu.I. Chumlyakov | Investigation of thermoelastic γ - α' - martensitic transformation in FeNiCoAlX (X=Ta, Nb, Ti) high-strength crystals |
| Session | B: Processing | |
| 15:00 | L.-G. Bujoreanu | Processing effects on the structure and properties of Fe based superelastic alloys |
| Session | E: Modeling | |
| 15:25 | A. Walnsch | Microstructural investigation and thermodynamic modelling of Fe-Mn-Al-Ni shape memory alloys |

Overview Thursday & Friday

| | | |
|----------------------------|--|--|
| Session | F: Applications | |
| 15:50 | A. Arabi-Hashemi | FeMnSi based shape memory alloys for civil engineering applications |
| 18:00 | Conference Dinner | |
| Friday, 18 May 2018 | | |
| Session | A: Constitution and Alloy Development | |
| 09:00 | H. Mehrer | Diffusion in Binary Neighbour-Systems of Shape-Memory Alloys |
| Session | C: Characterization and Testing | |
| 09:25 | E. Panchenko | Design of ferromagnetic single crystals with two-way shape memory effect based on low-temperature stress-induced martensite ageing. |
| 09:50 | S. Konoplyuk | Sequence of phase transformations leading to temperature hysteresis of the magnetic transition in Ni-Mn-Ga alloy |
| 10:15 | Coffee Break | |
| Session | A: Constitution and Alloy Development | |
| 11:15 | P. Decker | Developing New High Temperature Shape Memory Alloys by Thin Film Combinatorial Materials Science and High-throughput Experimentation |
| 11:40 | Closing Remarks | |
| 12:00 | End of the 2nd HTSMAs | |

Programme Tuesday 15 May 2018 (10:00 - 15:50)

| Tuesday, 15 May 2018 | |
|----------------------|--|
| 10:00 | Registration |
| 11:00 | Welcome Reception |
| 12:15 | Opening Ceremony H.J. Maier, Leibniz Universität Hannover (Germany) |
| Session Chair | H.J. Maier, Leibniz Universität Hannover (Germany) |
| 12:40 | Plenary Lecture Tailoring the Behavior of NiTiHf Alloys Fabricated by Conventional and Selective Laser Melting Methods H. Karaca (Sp), G. Toker, University of Kentucky (United States); M. Elahinia, N.S. Moghaddam, University of Toledo (United States) |
| Session | B: Processing |
| 13:30 | Processing and functional stability of Ti-Ta-based high temperature shape memory alloys J. Frenzel (Sp), G. Eggeler, D. Piorunek, Ruhr-Universität Bochum (Germany) |
| Session | D: Functional and Structural Degradation |
| 13:55 | On the Oxidation Behavior and its Influence on the Martensitic Transformation of Ti-Ta High Temperature Shape Memory Alloys D. Langenkämper (Sp), G. Eggeler, J. Frenzel, A. Paulsen, C. Somsen, Ruhr-Universität Bochum (Germany) |
| 14:20 | Coffee Break |
| Session Chair | R. Santamarta, University of the Balearic Islands (Spain) |
| Session | E: Modeling |
| 15:00 | Ab-initio calculations of the stability and transformation temperature in Ti-Ta-X HTSMAs A. Ferrari (Sp), R. Drautz, J. Rogal, Ruhr-Universität Bochum (Germany) |
| 15:25 | Martensitic transformation of TiPd-X as potential high temperature shape memory alloys (X=Ru, Ni, Au, OS) H. Chauke (Sp), R. Diale, P. Ngoepe, University of Limpopo (South Africa) |

Programme Tuesday 15 May 2018 (15:50 - 17:55)

| Session | B: Processing |
|---------|--|
| 15:50 | High temperature extrusion of a multocrystalline Co-Ni-Ga High-Temperature Shape Memory Alloy and its influence on the microstructure and functional properties E. Karsten (Sp), Leibniz Universität Hannover (Germany); R. Eifler, O. Golovko, H.J. Maier, F. Schäfke, Leibniz Universität Hannover (Germany); P. Krooß, T. Niendorf, University of Kassel (Germany) |
| 16:15 | In situ neutron diffraction analyzing stress-induced phase transformation and martensite elasticity in [001]-oriented CoNiGa shape memory alloy single crystals A. Reul (Sp), W. Schmahl, LMU Munich (Germany); P. Krooß, C. Lauhoff, T. Niendorf, University of Kassel (Germany); M. Gutmann, SIS Facility, Rutherford Appleton Laboratory (United Kingdom); P.M. Kadletz, Ludwig-Maximilians-Universität Munich (Denmark); Yu.I. Chumlyakov, Tomsk State University (Russia) |
| 16:40 | Strong influence of small volume change on superelastic deformation of high-temperature shape memory alloys V. Lvov (Sp), Taras Shevchenko National University (Ukraine); G. Gerstein, Leibniz Universität Hannover (Germany); V.A. Chernenko, Fundación Ikerbasque, BCMaterials and University of the Basque Country (Spain) |
| 17:05 | High Temperature Nanoindentation for Characterizing Shape Memory Materials up to 800°C P. Pavlov (Sp), Anton Paar Germany GmbH (Germany); N. Randall, Anton Paar TriTec SA (Switzerland) |
| 17:30 | Diffraction investigations on the omega phase in Ti75Ta25 high temperature shape memory alloy by synchrotron radiation and transmission electron microscopy C. Somsen (Sp), G. Eggeler, J. Frenzel, D. Langenkämper, A. Paulsen, Ruhr-Universität Bochum (Germany); E. Karsten, H.J. Maier, Leibniz Universität Hannover (Germany) |



Postersession Tuesday 15 May 2018 (19:30)

| 19:30 | Postersession |
|-------|--|
| PO-13 | Combinatorial investigation of Co-Ni-Ga-X materials libraries P. Decker (Sp), J. Fortmann, A. Ludwig, S. Salomon, Ruhr-Universität Bochum (Germany) |
| PO-19 | Ti-Pt high-temperature shape memory alloy subjected to severe plastic deformation T. Waitz (Sp), M. Kerber, University of Vienna (Austria); M. Matsuda, Kumamoto University (Japan) |
| PO-25 | Microstructure-Functional Behavior-Relationship in High Entropy Shape Memory Alloys S. Reschka (Sp), H.J. Maier, M.A. Swider, Leibniz Universität Hannover (Germany); G. Eggeler, J. Frenzel, D. Piorunek, Ruhr-Universität Bochum (Germany) |
| PO-33 | Martensite stabilization in CoNiGa high temperature shape memory alloys P. Krooß (Sp), C. Lauhoff, T. Niendorf, University of Kassel (Germany); P.M. Kadletz, Ludwig-Maximilians-Universität Munich (Germany); Yu.I. Chumlyakov, Tomsk State University (Russia); H.J. Maier, Leibniz Universität Hannover (Germany) |
| PO-34 | In-situ characterization of functional properties in polycrystalline Co-Ni-Ga high-temperature shape memory alloys C. Lauhoff (Sp), P. Krooß, T. Niendorf, M. Vollmer, University of Kassel (Germany) |
| PO-38 | On the suitability of Fe-Mn-Al-Ni for high temperature shape memory alloy applications M. Vollmer (Sp), P. Krooß, C. Lauhoff, T. Niendorf, University of Kassel (Germany) |
| PO-56 | Landau Theory of the Martensitic Phase Transition in NiTi Shape Memory Alloy W. Schmahl (Sp), K. Schiebel, P.M. Kadletz, Ludwig-Maximilians-Universität Munich (Germany); M. Hoelzel, Technische Universität München, Forschungsneutronenquelle Heinz Maier-Leibnitz (FRM II) (Germany) |
| PO-57 | Temperature dependence of localized deformation of NiTi wires in tension characterized by 1D-DIC method L. Kaderavek (Sp), L. Heller, L. Klimša, P. Šittner, The Czech Academy of Sciences (Czech Republic) |



Programme Wednesday 16 May 2018 (09:00 - 12:35)

| Wednesday, 16 May 2018 | |
|------------------------|--|
| Session Chair | J. San Juan Núñez, University of the Basque Country (Spain) |
| Session | B: Processing |
| 09:00 | Functional characterization of nitinol-hafnium wire for use in high speed, high temperature actuators J. Pilch (SP), The Czech Academy of Sciences (Czech Republic) |
| 09:25 | The influence of cold and warm rolling on the thermo-mechanical behavior of near-equiatomic NiTiHf20 high-temperature shape memory alloy N. Babacan (Sp), Texas A&M University / Gazi University (United States); M. Bilal, C. Hayrettin, I. Karaman, Texas A&M University (United States); O. Benafan, NASA Glenn Research Center (United States) |
| Session | C: Characterization and Testing |
| 09:50 | The Effect of Severe Plastic Deformation to the Shape Memory Properties of Ni50Ti30Hf20 High Temperature Shape Memory Alloy During Heating-Cooling Cycles Under Constant High Stress Magnitudes H. Tugrul (Sp), B. Kockar, H.H. Saygili, Hacettepe University (Turkey); I. Karaman, Texas A&M University (United States) |
| 10:15 | Thermo-Elastic Behaviour of the Martensitic Transformation in Ti-Ni-Hf High-Temperature Shape Memory Alloys J. San Juan Núñez (Sp), University of the Basque Country (Spain); M. Nó, M. Pérez-cerrato, University of the Basque Country (Spain); B. Maaß, ING PULS GmbH (Germany) |
| Session | D: Functional and Structural Degradation |
| 10:40 | Investigating The Effect Of Aging Heat Treatment On The Functional Fatigue Behavior Of Ni50.3Ti29.7Hf20 High Temperature Shape Memory Alloy B. Kockar, H. Saygili (Sp), H.O. Tugrul, Hacettepe University (Turkey) |
| 11:05 | Coffee Break |
| Session Chair | B. Kockar, Hacettepe University (Turkey) |
| Session | D: Functional and Structural Degradation |
| 11:45 | Functional Fatigue Behavior of Severe Plastically Deformed Ni50Ti30Hf20 High Temperature Shape Memory Alloy B. Kockar (Sp), H.H. Saygili, H.O. Tugrul, Hacettepe University (Turkey); I. Karaman, Texas A&M University (United States) |
| 12:10 | Thermal and mechanical behavior of Ni-rich Ni-Ti-Hf/Zr HTSMA after aging near their working temperatures R. Santamarta (Sp), A.M. Perez-Sierra, J. Pons, S. Xu, University of the Balearic Islands (Spain); I. Karaman, Texas A&M University (United States); R.D. Noebe, NASA Glenn Research Center (United States) |

Programme Wednesday 16 May 2018 (12:35 - 19:00)

| | |
|---------|---|
| Session | A: Constitution and Alloy Development |
| 12:35 | Thermo-Mechanical Behaviour of Cu-Al-Ni High-Temperature Shape Memory Alloys J. San Juan Núñez (Sp), T. Breczewski, A. López-Echarri, I. López-Ferreño, M. Nó, I. Ruiz-Larrea, University of the Basque Country (Spain) |
| 13:00 | Lunch Break |
| 14:00 | Excursion |



Programme Thursday 17 May 2018 (09:00 - 13:45)

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|------------------------------|---|
| Thursday, 17 May 2018 | |
| Session Chair | H. Karaca, University of Kentucky (United States) |
| 09:00 | Plenary Lecture Phase transformations in NiTi at high stresses and temperatures - beyond the strain recoverability limits P. Šittner (Sp), L. Heller, L. Kaderavek, P. Sedlák, P. Sedmak, H. Seiner, O. Tyc, M. Vronka, The Czech Academy of Sciences (Czech Republic) |
| Session | E: Modeling |
| 09:50 | Simulation of coupled transformation and plasticity in NiTi at elevated temperatures and stresses P. Sedlák (Sp), L. Heller, H. Seiner, P. Šittner, The Czech Academy of Sciences (Czech Republic) |
| Session | D: Functional and Structural Degradation |
| 10:15 | Ni-Mn-Ga high temperature shape memory alloys: Function stability in beta and beta + gamma regions A. Pérez Checa (Sp), BCMaterials (Spain); J. Feuchtwanger, University of the Basque Country (Spain); J.M. Barandiaran, V.A. Chernenko, Fundación Ikerbasque, BCMaterials and University of the Basque Country (Spain) |
| 10:40 | Coffee Break |
| Session Chair | G. Firstov, The National Academy of Sciences of Ukraine (Ukraine) |
| Session | A: Constitution and Alloy Development |
| 11:15 | On the strong dependence of transformation temperatures on alloy composition in Ni-Ti and Ni-Ti-Hf shape memory alloys R. Drautz, G. Eggeler, J. Frenzel, B. Maaß, I. Opahle, D. Piorunek (Sp), Ruhr-Universität Bochum (Germany) |
| 11:40 | Structure and properties of „pseudo NiTi“ and „pseudo NiAl“ multi-component high entropy shape memory intermetallics G. Firstov (Sp), T. Kosorukova, Y. Koval, Y. Matviychuk, V. Odnosum, A. Timoshevskii, The National Academy of Sciences of Ukraine (Ukraine); G. Gerstein, H.J. Maier, Leibniz Universität Hannover (Germany) |
| 12:05 | Optimizing Ni-Ti for Ferroic Cooling J. Frenzel (Sp), A. Paulsen, A. Wiczorek, Ruhr-Universität Bochum (Germany); G. Eggeler (Germany) |
| 12:35 | Lunch Break |

Programme Thursday 17 May 2018 (13:45 - 22:00)

| | |
|---------------|---|
| Session Chair | P. Šittner, The Czech Academy of Sciences (Czech Republic) |
| Session | N: Characterization and Testing |
| 13:45 | Phenomenological Study of the Shape Setting of NiTi Wires E. Alarcon Tarquino (Sp), L. Heller, P. Šittner, The Czech Academy of Sciences (Czech Republic); A. Racot, INP ENSIACET (France) |
| Session | A: Constitution and Alloy Development |
| 14:10 | Interatomic interaction in multi-component intermetallic compounds with approximate B2 structure: (TiZrHf)50(CoNiCu)50 example T. Kosorukova (Sp), G. Firstov, Y. Koval, Y. Matviychuk, V. Odnosum, A. Timoshevskii, The National Academy of Sciences of Ukraine (Ukraine); T. Kosorukova, G.V. Kurdyumov Institute for Metal Physics of the National Academy of Sciences of Ukraine (Ukraine) |
| 14:35 | Investigation of thermoelastic γ-α'- martensitic transformation in FeNiCoAlX (X=Ta, Nb, Ti) high-strength crystals Yu.I. Chumlyakov (Sp), I. Kireeva, I. Kuksgausen, M. Panchenko, V. Poklonov, K. Reunova, Tomsk State University (Russia) |
| Session | B: Processing |
| 15:00 | Processing effects on the structure and properties of Fe based superelastic alloys L.-G. Bujoreanu (Sp), N. Cimpoesu, R.-I. Comaneci, E. Mihalache, M. Popa, B. Pricop, Gheorghe Asachi - Technical University of Iasi (Romania); V.-D. Cojocaru, University POLYTEHNICA of Bucharest (Romania); C. Gurau, G. Gurau, Dunarea de Jos University (Romania); P. Krooß, T. Niendorf, M. Vollmer, University of Kassel (Germany) |
| Session | E: Modelling |
| 15:25 | Microstructural investigation and thermodynamic modelling of Fe-Mn-Al-Ni shape memory alloys A. Walnsch (Sp), O. Fabrichnaya, M.J. Kriegel, A. Leineweber, TU Bergakademie Freiberg (Germany) |
| Session | F: Applications |
| 15:50 | FeMnSi based shape memory alloys for civil engineering applications A. Arabi-Hashemi (Sp), Empa - Swiss Federal Laboratories for Materials Science & Technology (Switzerland); C. Leinenbach, Eidgenössische Materialprüfungs- und Forschungsanstalt (Switzerland) |
| 18:00 | Conference Dinner |

Programme Friday 18 May 2018 (09:00 -12:00)

| | |
|----------------------------|---|
| Friday, 18 May 2018 | |
| Session Chair | E. Panchenko, Tomsk State University (Russia) |
| Session | A: Constitution and Alloy Development |
| 09:00 | Diffusion in Binary Neighbour-Systems of Shape-Memory Alloys H. Mehrer (Sp), University of Münster (Germany) |
| Session | N: Characterization and Testing |
| 09:25 | Design of ferromagnetic single crystals with two-way shape memory effect based on low-temperature stress-induced martensite ageing. E. Panchenko (Sp), Yu.I. Chumlyakov, A. Eftifeeva, N. Larchenkova, K. Osipovich, E. Timofeeva, A. Tokhmetova, E. Yanushonite, Tomsk State University (Russia); G. Gerstein, H.J. Maier, Leibniz Universität Hannover (Germany) |
| 09:50 | Sequence of phase transformations leading to temperature hysteresis of the magnetic transition in Ni-Mn-Ga alloy S. Konoplyuk (Sp), V. Kokorin, The National Academy of Sciences of Ukraine (Ukraine); G. Gerstein, H.J. Maier, Leibniz Universität Hannover (Germany); O. Kolomiets, Lviv Polytechnic National University (Ukraine); S. Daniš, Charles University (Czech Republic); M. Mišek, The Czech Academy of Sciences (Czech Republic) |
| 10:15 | Coffee Break |
| Session | A: Constitution and Alloy Development |
| 11:15 | Developing New High Temperature Shape Memory Alloys by Thin Film Combinatorial Materials Science and High-throughput Experimentation P. Decker (Sp), A. Ludwig, Ruhr-Universität Bochum (Germany) |
| 11:40 | Closing Remarks |
| 12:00 | End of the 2nd HTSMAs |



List of Authors

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About the Irsee Monastery

The history of Irsee Monastery starts in the Eiberger Forest northwest of Irsee. It is said that pious men who had settled there gave up their solitary life and established a Benedictine community under the aegis of Margrave Heinrich von Ronsberg. The margrave gave them the forest and ceded his ancestral castle „Ursin“ to them around the year 1182. A separate monastery and a church were built at the foot of the Castle Mountain only few years later. According to legend, Mary had appeared to Abbot Cuno in a dream and shown him the site for the construction.

As a result, the cornerstone was laid for a monastery that was led to a heyday in the following centuries, through war and mismanagement, but also over and over again in crises. The monastery buildings were destroyed twice - during a fire in 1416 and during the German Peasants' War in 1525 - and had to be rebuilt. The Thirty Years' War led to the loss of the church treasure and the valuable monastery library. But under the leadership of dynamic abbots the monastery community repeatedly managed to emerge from existential dangers in an invigorated manner.



For instance, despite the turmoil of the War of the Spanish Succession and associated financial burden, new construction of the monastery and church was able to be accomplished: as the tower of the Romanesque monastery church collapsed in 1699, a prestigious new building was decided upon. After construction of the Baroque church under Abbot Romanus Köpfle, in 1707 Abbot Willibald Grind/ laid the cornerstone for the spacious monastery facility as we know it today.

Over the course of centuries, Irsee had evolved into a place of worship and scholarship under the Benedictine Order's motto: Ora et Labora (Pray and Work). Abbots such as Bernhard Beck and Ämilian Mock made Irsee a centre of spiritual and academic life. Moreover, the monastery was a business enterprise with own estates and workshops.

The Irsee abbots also campaigned to provide political independence for the monastery by attempting to establish a closed territorial dominion and acquiring all sovereign rights. The final step was taken in 1692 when Irsee Monastery was able to buy important rights from the Princely Monastic Foundation in Kempten: as an Imperial Monastery Irsee was now only subordinate to the Emperor himself. Secularisation marked the final stage under the activity of the Benedictines in Irsee. The monasteries in Bavaria were disbanded in 1802/03 and their possession was awarded to the state. The monastery's last abbot, Honorius Grieningner, moved to Kaufbeuren, where he died in 1809.

How to reach the Irsee Monastery

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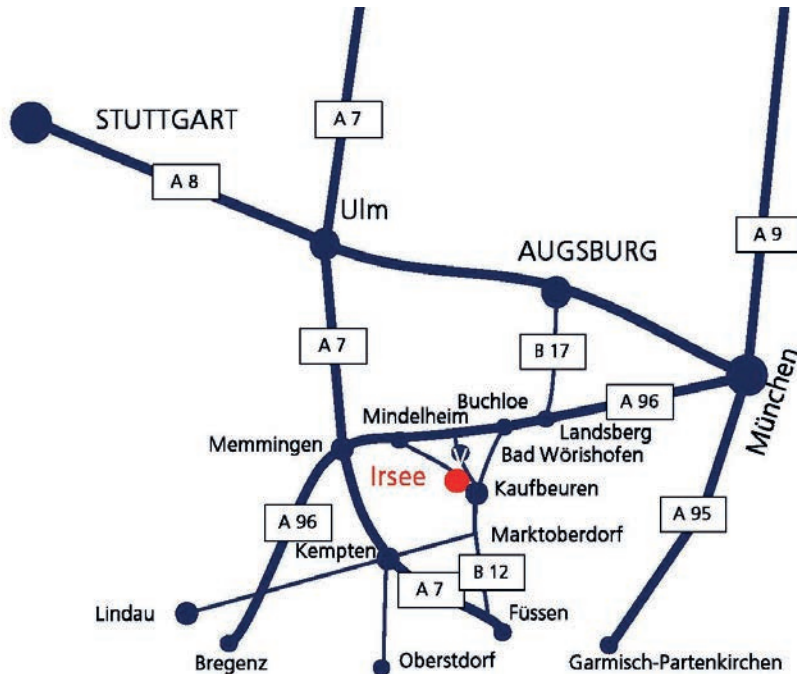


Situated away from long-distance traffic, Irsee Monastery can still be reached quickly and easily:

By car via the A7 Ulm – Kempten from north or south: at Memmingen, go onto the A96 towards Munich and take the Bad Wörishofen exit, towards Kaufbeuren.
In one hour from Munich and Augsburg via the A96, Bad Wörishofen exit.

For your convenience we will provide a **shuttle service** on Monday, May 14th from Kaufbeuren train station (Kaufbeuren Hauptbahnhof, from Munich Central Station about 2 h by train) to Kloster Irsee. In case you want to use this shuttle service, please send an email with the subjectline "HTSMAs: Shuttle Kaufbeuren" and your arrival time at the Kaufbeuren train station to Mrs. Karsten "mailto:karsten@iw.uni-hannover.de" in a timely manner.

Information about train connections are available at www.bahn.de.



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