



## Contents

## Proceedings of the 13th International Conference on Fusion Reactor Materials (ICFRM-13)

Committees .....	vii		
Preface .....	xv		
<b>Section 1. Multiscale modeling for fusion materials and structure</b>			
The EU programme for modelling radiation effects in fusion reactor materials: An overview of recent advances and future goals, <i>S.L. Dudarev, J.-L. Boutard, R. Lässer, M.J. Caturla, P.M. Derlet, M. Fivel, C.-C. Fu, M.Y. Lavrentiev, L. Malerba, M. Mrovec, D. Nguyen-Manh, K. Nordlund, M. Perlado, R. Schäublin, H. Van Swygenhoven, D. Terentyev, J. Wallenius, D. Weygand and F. Willaime</i>	1		
Advances in microstructural characterization, <i>S.J. Zinkle, G.E. Ice, M.K. Miller, S.J. Pennycook and X.-L. Wang</i>	8		
Material science activities for fusion reactors in Kazakhstan, <i>I. Tazhibayeva, E. Kenzhin, V. Shestakov, Y. Chikhray, T. Kulsartov, E. Azizov, O. Filatov and V. Chernov</i>	15		
Including electronic effects in damage cascade simulations, <i>D.M. Duffy and A.M. Rutherford</i>	19		
Magnetic cluster expansion simulations of FeCr alloys, <i>M.Yu. Lavrentiev, S.L. Dudarev and D. Nguyen-Manh</i>	22		
Atomistic simulation of single kinks of screw dislocations in $\alpha$ -Fe, <i>L. Ventelon, F. Willaime and P. Leyronnas</i>	26		
Nucleation and growth of vacancy clusters in $\beta$ -SiC during irradiation, <i>K. Morishita, Y. Watanabe, A. Kohyama, H.L. Heinisch and F. Gao</i>	30		
Impurity effects on He diffusion in $\alpha$ -Fe, <i>C.J. Ortiz, M.J. Caturla, C.C. Fu and F. Willaime</i>	33		
Vacancy defects in Fe: Comparison between simulation and experiment, <i>M.R. Gilbert, Z. Yao, M.A. Kirk, M.L. Jenkins and S.L. Dudarev</i>	36		
Kinetic Monte-Carlo modeling of hydrogen retention and re-emission from Tore Supra deposits, <i>A. Rai, R. Schneider, M. Warrier, P. Roubin, C. Martin and M. Richou</i>	41		
The magnetic origin of anomalous high-temperature stability of dislocation loops in iron and iron-based alloys, <i>S.L. Dudarev, P.M. Derlet and R. Bullough</i>	45		
Atomistic calculation of elastic constants of alpha-iron containing point defects by means of magnetic interatomic potentials, <i>S. Chiesa, P.M. Derlet, S.L. Dudarev and H. Van Swygenhoven</i>	49		
Comparative study of survived displacement damage defects in iron irradiated in IFMIF and fusion power reactors, <i>S.P. Simakov, A.Yu. Konobeyev, U. Fischer and V. Heintzel</i>	52		
Atomistic modeling of nanosized Cr precipitate contribution to hardening in an Fe-Cr alloy, <i>J.-H. Shim, D.-I. Kim, W.-S. Jung, Y.W. Cho and B.D. Wirth</i>	56		
Magnetic properties of point defect interaction with impurity atoms in Fe-Cr alloys, <i>D. Nguyen-Manh, M.Yu. Lavrentiev and S.L. Dudarev</i>	60		
3D Dislocation dynamics modelling of interactions between prismatic loops and mobile dislocations in pure iron, <i>R. Novokshanov and S. Roberts</i>	64		
Interaction between dislocations in bcc iron at high temperature, <i>S.P. Fitzgerald and S.L. Dudarev</i>	67		
Microstructural evolutions and cyclic softening of 9%Cr martensitic steels, <i>F. Benjamin, S. Maxime, R. Alexandra, B. Françoise and P. André</i>	71		
Molecular dynamics study of structure transformation and H effects in irradiated silica, <i>F. Mota, M.-J. Caturla, J.M. Perlado, J. Mollá and A. Ibarra</i>	75		
Vacancies, interstitials and gas atoms in beryllium, <i>M.G. Ganchenkova, P.V. Vladimirov and V.A. Borodin</i>	79		
Effects of porosity on the elastic behaviour of CVI SiC/SiC composites, <i>L. Gélébart and C. Colin</i>	82		
<i>Ab initio</i> study of interstitial migration in Fe-Cr alloys, <i>P. Olsson</i>	86		
Object Kinetic Monte Carlo calculations of electron and He irradiation of nickel, <i>B. Gámez, L. Gámez, C.J. Ortiz, M.J. Caturla and J.M. Perlado</i>	90		
A study of the interaction between irradiation induced-defect and a line dislocation in bcc-iron, <i>S. Fujita, T. Okita, E. Kuramoto and N. Sekimura</i>	93		
Molecular dynamics simulation of radiation damage in bcc tungsten, <i>J. Fikar and R. Schäublin</i>	97		
Dislocation-void interaction in Fe: A comparison between molecular dynamics and dislocation dynamics, <i>S.M. Hafez Haghghat, M.C. Fivel, J. Fikar and R. Schaublin</i>	102		
Kinetic properties of small He-vacancy clusters in iron, <i>V.A. Borodin and P.V. Vladimirov</i>	106		
A density functional theory assessment of the clustering behaviour of He and H in tungsten, <i>C.S. Becquart and C. Domain</i>	109		
The influence of Helium bubbles on the critical resolved shear stress of dispersion strengthened alloys, <i>B. Bakó, M. Samaras, D. Weygand, J. Chen, P. Gumbsch and W. Hoffelner</i>	112		
Molecular dynamics simulation of dislocation-void interactions in BCC Mo, <i>H.-J. Lee and B.D. Wirth</i>	115		
Advanced neutron shielding material using zirconium borohydride and zirconium hydride, <i>T. Hayashi, K. Tobita, Y. Nakamori and S. Orimo</i>	119		
<b>Section 2. Radiation effects: Microstructural evolution</b>			
Fusion-based hydrogen production reactor and its material selection, <i>Y. Wu and FDS team</i>	122		
Damage to preheated tungsten targets after multiple plasma impacts simulating ITER ELMs, <i>I.E. Garkusha, A.N. Bandura, O.V. Byrka, V.V. Chebotarev, I. Landman, V.A. Makhraj, S. Pestchanyi and V.I. Tereshin</i>	127		
Modeling of cascade and sub-cascade formation at high PKA energies in irradiated fusion structural materials, <i>A.I. Ryazanov, E.V. Metelkin and E.V. Semenov</i>	132		
Effect of high dose/high temperature irradiation on the microstructure of heat resistant 11Cr ferritic/martensitic steels, <i>S. Yamashita, Y. Yano, Y. Tachi and N. Akasaka</i>	135		

Diffusion of 3D-migrating self-interstitial clusters in diluted and concentrated Fe–Cr alloys, <i>D. Terentyev, P. Olsson and L. Malerba</i>	140	High dose, up to 80 dpa, mechanical properties of Eurofer 97, <i>B. van der Schaaf, C. Petersen, Y. De Carlan, J.W. Rensman, E. Gaganidze and X. Averty</i>	236
Irradiation creep and microstructural changes in an advanced ODS ferritic steel during helium implantation under stress, <i>J. Chen, M.A. Pouchon, A. Kimura, P. Jung and W. Hoffelner</i>	143	Effects of helium on ductile-brittle transition behavior of reduced-activation ferritic steels after high-concentration helium implantation at high temperature, <i>A. Hasegawa, M. Ejiri, S. Nogami, M. Ishiga, R. Kasada, A. Kimura, K. Abe and S. Jitsukawa</i>	241
Dependence of steady-state radiation swelling rate of 10.1Cr–16Cr–15Ni–2Mo–2Mn–Ti–Si austenitic steel on dpa rate and irradiation temperature, <i>A. Kozlov and I.A. Portnykh</i>	147	Assessment of irradiation embrittlement of the Eurofer97 steel after 590 MeV proton irradiation, <i>P. Spätig, R. Stoensescu, P. Mueller, G.R. Odette and D. Gragg</i>	245
Influence of damage rate on physical and mechanical properties and swelling of 18Cr–9Ni austenitic steel in the range of $3 \times 10^{-9}$ to $4 \times 10^{-8}$ dpa/s, <i>E.N. Shcherbakov, A.V. Kozlov, P.I. Yagovitin, M.V. Evseev, E.A. Kinev, V.L. Panchenko, I. Isobe, M. Sagisaka, T. Okita, N. Sekimura and F.A. Garner</i>	152	Anisotropic swelling observed during stress-free reirradiation of AISI 304 tubes previously irradiated under stress, <i>F.A. Garner, J.E. Flinn and M.M. Hall</i>	249
Severe embrittlement of neutron irradiated austenitic steels arising from high void swelling, <i>V.S. Neustroev and F.A. Garner</i>	157	Overview of the tensile properties of EUROFER in the unirradiated and irradiated conditions, <i>E. Lucon and W. Vandermeulen</i>	254
TEM characterisation of heavy-ion irradiation damage in FeCr alloys, <i>S. Xu, Z. Yao and M.L. Jenkins</i>	161	Mobility of dislocations in thermal aged and irradiated Fe–Cr alloys, <i>D. Terentyev, G. Bonny and L. Malerba</i>	257
Effects of radiation-induced defects on microstructural evolution of Fe–Cr model alloys, <i>J. Kwon, T. Toyama, Y.-M. Kim, W. Kim and J.-H. Hong</i>	165	Influence of radiation damage on plasma facing material erosion, <i>V.S. Koidan, A.N. Brukhanov, O.K. Chugunov, V.M. Gureev, B.I. Khripunov, S.N. Kornienko, B.V. Kuteev, S.T. Latushkin, A.M. Muksunov, V.B. Petrov, A.I. Ryazanov, V.P. Smirnov, V.G. Stolyarova and V.N. Unezhev</i>	261
Positron annihilation of vacancy-type defects in neutron-irradiated 4H–SiC, <i>Q. Xu, T. Yoshiie and M. Okada</i>	169	Creep behavior of the F82H steel under irradiation with 17 MeV protons at 300 °C, <i>J. Nagakawa, S. Uchio, Y. Murase, N. Yamamoto and K. Shiba</i>	264
Evaluation of radiation damages on the first-wall surface in LHD exposed to charge-exchanged helium particles, <i>M. Tokitani, N. Yoshida, M. Miyamoto, Y. Ohtawa, K. Tokunaga, T. Fujiwara, S. Masuzaki, N. Ashikawa, M. Shoji, M. Kobayashi, A. Sagara, N. Noda, H. Yamada, A. Komori, LHD Experimental Group, S. Nagata and B. Tsuchiya</i>	173	Effect of irradiation temperature and dose on SHC of pure Cu, <i>S.A. Fabritsiev and A.S. Pokrovsky</i>	268
Dynamical interaction of helium bubbles with cascade damage in Fe–9Cr ferritic alloy, <i>K. Ono, M. Miyamoto, K. Arakawa and R.C. Birtcher</i>	177	Anomalously large deformation of 12Cr18Ni10Ti austenitic steel irradiated to 55 dpa at 310 °C in the BN-350 reactor, <i>M.N. Gusev, O.P. Maksimkin, I.S. Osipov and F.A. Garner</i>	273
Difference between helium retention properties in 316L and 304 stainless steels, <i>M. Miyamoto, K. Ono, Y. Mori and D. Shitabou</i>	181	Irradiation behavior of Ti-stabilized 316L type steel, <i>B.S. Rodchenkov, G.M. Kalinin, Yu.S. Strebkov, V.K. Shamardin, V.I. Prokhorov and T.M. Bulanova</i>	277
The conflicting roles of boron on the radiation response of precipitate-forming austenitic alloys at ~400 °C, <i>T. Okita, N. Sekimura and F.A. Garner</i>	185	In-situ SCC observation of thermally-sensitized and cold-worked type 304 stainless steel irradiated to a neutron fluence of $1 \times 10^{25}$ n/m <sup>2</sup> , <i>J. Nakano, Y. Nemoto, Y. Miwa, K. Usami, T. Tsukada and K. Hide</i>	281
Interaction mechanisms of glissile loops in FCC systems by the elastic theory, <i>T. Okita, S. Fujita, Y. Yang and N. Sekimura</i>	188	Study of Li <sub>2</sub> TiO <sub>3</sub> + 5 mol% TiO <sub>2</sub> lithium ceramics after long-term neutron irradiation, <i>Y. Chikhray, V. Shestakov, O. Maksimkin, L. Turubarova, I. Osipov, T. Kulsartov, A. Kuykabayeba, I. Tazhibayeva, H. Kawamura and K. Tsuchiya</i>	286
Embrittlement of irradiated F82H in the absence of irradiation hardening, <i>R.L. Klueh, K. Shiba and M.A. Sokolov</i>	191	Effects of residual stress on irradiation hardening in stainless steels, <i>N. Okubo, Y. Miwa, K. Kondo and Y. Kaji</i>	290
Investigation of microstructural evolution under neutron irradiation in Eurofer97 steel by means of small-angle neutron scattering, <i>R. Coppola, R. Lindau, R.P. May, A. Möslang and M. Valli</i>	195	In-pile creep rupture properties of ODS ferritic steel claddings, <i>T. Kaito, S. Ohtsuka, M. Inoue, T. Asayama, T. Uwaba, S. Mizuta, S. Ukai, T. Furukawa, C. Ito, E. Kagota, R. Kitamura, T. Aoyama and T. Inoue</i>	294
Capture efficiency for clustering reaction between charged defects in $\beta$ -SiC, <i>Y. Watanabe, K. Morishita and A. Kohyama</i>	199	Tensile and low cycle fatigue properties of different ferritic/martensitic steels after the fast reactor irradiation ‘ARBOR 1’, <i>C. Petersen, A. Povstyanko, V. Prokhorov, A. Fedoseev, O. Makarov and M. Walter</i>	299
Positron annihilation lifetime measurements of vanadium alloy and F82H irradiated with fission and fusion neutrons, <i>K. Sato, K. Inoue, T. Yoshiie, Q. Xu, E. Wakai, C. Kutsukake and K. Ochiai</i>	203	Thermal diffusivity of ceramics at the neutron irradiation temperature estimated from post-irradiation measurements at 123–413 K, <i>M. Akiyoshi</i>	303
Radiation growth of beryllium, <i>V.P. Chakin, A. Posevin, A. Obukhov and P.P. Silantyev</i>	206	Mechanical properties of neutron irradiated nanostructured ferritic alloy 14YWT, <i>D.A. McClintock, D.T. Hoelzer, M.A. Sokolov and R.K. Nanstad</i>	307
Characterization of deformation structure in ion-irradiated stainless steels, <i>T. Miura, K. Fujii, K. Fukuya and Y. Ito</i>	210	Preliminary analysis of irradiation effects on CLAM after low dose neutron irradiation, <i>L. Peng, Q. Huang, C. Li and S. Liu</i>	312
Hydrogen micro-kinetics in titanium under mechanical stress studied by ion beam analysis, <i>T.S. Wang, H.Y. Lv, D. Grambole, Z. Yang, H.B. Peng and Y.C. Han</i>	214	Effect of two-steps heat treatments on irradiation hardening in F82H irradiated at 573 K, <i>M. Ando, H. Tanigawa, E. Wakai and R.E. Stoller</i>	315
Effects of transmutation elements on the microstructural evolution and electrical resistivity of neutron-irradiated tungsten, <i>T. Tanno, A. Hasegawa, J.C. He, M. Fujiwara, M. Satou, S. Nogami, K. Abe and T. Shishido</i>	218	Numerical investigation by finite element simulations of the ball punch test: Application to tempered martensitic steels, <i>E.N. Campitelli, P. Spätig and J. Bertsch</i>	319
Cavity swelling and dislocation evolution in SiC at very high temperatures, <i>S. Kondo, Y. Katoh and L.L. Snead</i>	222	Fracture toughness master-curve analysis of the tempered martensitic steel Eurofer97, <i>P. Mueller, P. Spätig, R. Bonadé, G.R. Odette and D. Gragg</i>	323
Multiscale modeling of point defect interactions in Fe–Cr alloys, <i>K.L. Wong, H.-J. Lee, J.-H. Shim, B. Sadigh and B.D. Wirth</i>	227	Recovery of neutron-induced damage of Si analyzed by thermal expansion measurement, <i>S. Yamazaki, K. Yoshida and T. Yano</i>	328
		Microstructure of heavily neutron-irradiated SiC after annealing up to 1500 °C, <i>T. Sawabe, M. Akiyoshi, K. Ichikawa, K. Yoshida and T. Yano</i>	333
<b>Section 3. Radiation effects: Mechanical and physical property degradation</b>			
Hardening mechanisms of reduced activation ferritic/martensitic steels irradiated at 300 °C, <i>H. Tanigawa, R.L. Klueh, N. Hashimoto and M.A. Sokolov</i>	231		

**Section 4. Radiation effects: He and H effects**

Helium effects on microstructural evolution in tempered martensitic steels: In situ helium implantation studies in HFIR, *T. Yamamoto, G.R. Odette, P. Miao, D.J. Edwards and R.J. Kurtz*

Dose rate dependence of radiation induced conductivity for hydrogen-doped perovskite ceramics at 473 K, *B. Tsuchiya, A. Morono, S.M. González, E.R. Hodgson, S. Nagata, K. Toh and T. Shikama*

Tensile properties of ODS-14%Cr ferritic alloy irradiated in a spallation environment, *J. Henry, X. Averty, Y. Dai, J.P. Pizzanelli and J.J. Espinas*

Study of helium embrittlement in boron doped EUROFER97 steels, *E. Gaganidze, C. Petersen and J. Aktaa*

Molecular dynamics modeling of chemical erosion of hydrocarbon films, *U. von Toussaint, P.N. Maya and C. Hopf*

Recent findings on blistering and deuterium retention in tungsten exposed to high-fluence deuterium plasma, *W.M. Shu, A. Kawasuso and T. Yamanishi*

Stability of helium bubbles in alpha-iron: A molecular dynamics study, *G. Lucas and R. Schaublin*

Effects of hydrogen and helium produced by transmutation reactions on void formation in copper isotopic alloys irradiated with neutrons, *Q. Xu, T. Yoshiie and K. Sato*

Chemical behavior of hydrogen isotopes into boronized film in LHD, *A. Yoshikawa, Y. Kikuchi, T. Suda, N. Ashikawa, K. Nishimura, A. Sagara, N. Noda, Y. Oya and K. Okuno*

Study on retention behavior and chemical states of energetic deuterium implanted into carbon-contained boron film, *Y. Kikuchi, Y. Yang, A. Yoshikawa, T. Suda, A. Sagara, N. Noda, Y. Oya and K. Okuno*

The trapping behavior of deuterium in F82H ferritic/martensitic steel, *D. Hamaguchi, H. Iwakiri, T. Kawamura, H. Abe, T. Iwai, K. Kikuchi and N. Yoshida*

Hydrogen trapping in neutron-irradiated graphite, *H. Atsumi, A. Muhaimin, T. Tanabe and T. Shikama*

Helium and hydrogen measurements on pure materials irradiated in SINQ Target 4, *B.M. Oliver and Y. Dai*

Fracture toughness of irradiated modified 9Cr-1Mo steel, *S.H. Kim, J.-H. Yoon, W.S. Ryu, C.B. Lee and J.H. Hong*

Migration of vacancies, He interstitials and He-vacancy clusters at grain boundaries in  $\alpha$ -Fe, *F. Gao, H.L. Heinisch and R.J. Kurtz*

Post-implantation thermal desorption of helium from poly- and single-crystalline iron, *D. Xu and B.D. Wirth*

**Section 5. Ferritic/martensitic and ODS steels**

Status and strategy of fusion materials development in China, *Q.Y. Huang, Y.C. Wu, J.G. Li, F.R. Wan, J.L. Chen, G.N. Luo, X. Liu, J.M. Chen, Z.Y. Xu, X.G. Zhou, X. Ju, Y.Y. Shan, J.N. Yu, S.Y. Zhu, P.Y. Zhang, J.F. Yang, X.J. Chen and S.M. Dong*

Fusion materials development program in the broader approach activities, *T. Nishitani, H. Tanigawa, S. Jitsukawa, T. Nozawa, K. Hayashi, T. Yamanishi, K. Tsuchiya, A. Möslang, N. Baluc, A. Pizzuto, E.R. Hodgson, R. Laesser, M. Gasparotto, A. Kohyama, R. Kasada, T. Shikama, H. Takatsu and M. Araki*

Recent progress toward development of reduced activation ferritic/martensitic steels for fusion structural applications, *R.J. Kurtz, A. Alamo, E. Lucon, Q. Huang, S. Jitsukawa, A. Kimura, R.L. Klueh, G.R. Odette, C. Petersen, M.A. Sokolov, P. Spätig and J.-W. Rensman*

High temperature creep-fatigue-oxidation interactions in 9-12%Cr martensitic steels, *B. Fournier, S. Maxime, C. Christel, N. Michel, R. Véronique, B. Annick and P. André*

Effect of helium on tensile properties and microstructure in 9%Cr-WVTa-steel after neutron irradiation up to 15 dpa between 250 and 450 °C, *E. Materna-Morris, A. Möslang, R. Rolli and H.-C. Schneider*

Effect of mechanical alloying atmosphere on the microstructure and Charpy impact properties of an ODS ferritic steel, *Z. Oksiuta and N. Baluc*

CEA developments of new ferritic ODS alloys for nuclear applications, *Y. de Carlan, J.-L. Bechade, P. Dubuisson, J.-L. Seran, P. Billot,*

*A. Bougault, T. Cozzika, S. Doriot, D. Hamon, J. Henry, M. Ratti, N. Lochet, D. Nunes, P. Olier, T. Leblond and M.H. Mathon*

Fatigue life and strain hardening behavior of JLF-1 steel, *H. Li, A. Nishimura, T. Muroga and T. Nagasaka*

Mockups of blanket cooling plates manufactured in different diffusion welding setups, *A. von der Weth and J. Aktaa*

Dislocation loops in Eurofer and a Fe-Cr alloy irradiated by ions at 350 and 550 °C at 3 dpa: Effect of dose rate, *L. Boulanger and Y. Serruys*

Effect of heat treatment on microstructure and hardness of Eurofer 97, Eurofer ODS and T92 steels, *Z. Lu, R.G. Faulkner, N. Riddle, F.D. Martino and K. Yang*

Microstructural characterization of Y<sub>2</sub>O<sub>3</sub> ODS-Fe-Cr model alloys, *V. de Castro, T. Leguey, A. Muñoz, M.A. Monge, R. Pareja, E.A. Marquis, S. Lozano-Perez and M.L. Jenkins*

Interfacial optimization of tungsten fibre-reinforced copper for high-temperature heat sink material for fusion application, *A. Herrmann, K. Schmid, M. Balden and H. Bolt*

Void swelling in MA956 ODS steel irradiated with 122 MeV Ne-ions at elevated temperatures, *C.H. Zhang, J. Jang, H.D. Cho and Y.T. Yang*

Void formation in ODS EUROFER produced by hot isostatic pressing, *Y. Ortega, M.A. Monge, V. de Castro, A. Muñoz, T. Leguey and R. Pareja*

Strengthening of the RAFMS RUSFER - EK181 through nanostructuring surface layers, *A.V. Panin, V.M. Chernov, M. Leontieva-Smirnova and E. Melnikova*

Specific welds for test blanket modules, *M. Rieth and J. Rey*

Study of PM2000 microstructure evolution following FSW process, *M.H. Mathon, V. Klosek, Y. de Carlan and L. Forest*

Effects of aluminum on high-temperature strength of 9Cr-ODS steel, *S. Ohtsuka, T. Kaito, M. Inoue, T. Asayama, S.W. Kim, S. Ukai, T. Narita and H. Sakasegawa*

High temperature characterization of LPS-SiC based materials with oxide additives, *S.P. Lee, M.H. Lee, J.K. Lee, A. Kohyama and J.H. Lee*

Characteristic evaluation of liquid phase-sintered SiC materials by a nondestructive technique, *J.K. Lee, S.P. Lee, K.S. Cho, J.H. Lee and A. Kohyama*

Development of low activation ferritic/martensitic steel welding technology for the fabrication of KO HCSB TBM, *S. Cho, D.-H. Kim and M.-Y. Ahn*

Effect of thermal ageing on tensile and creep properties of JLF-1 and CLAM steels, *Y.F. Li, T. Nagasaka, T. Muroga, Q.Y. Huang and Y.C. Wu*

Structure and properties of nano-sized Eurofer 97 steel obtained by hydrostatic extrusion, *M. Lewandowska, A.T. Krawczyńska, M. Kulczyk and K.J. Kurzydłowski*

Irradiation hardening and embrittlement in high-Cr oxide dispersion strengthened steels, *S. Oh, J.S. Lee, C. Jang and A. Kimura*

Corrosion behavior of Al-alloying high Cr-ODS steels in lead-bismuth eutectic, *S. Takaya, T. Furukawa, K. Aoto, G. Müller, A. Weisenburger, A. Heinzel, M. Inoue, T. Okuda, F. Abe, S. Ohnuki, T. Fujisawa and A. Kimura*

Evaluation of threshold stress of the MA957 ODS ferritic alloy, *H. Sakasegawa, L. Chaffron, F. Legendre, M. Brocq, L. Boulanger, S. Poissonnet, Y. de Carlan, J. Bechade, T. Cozzika and J. Malaplate*

On the lattice coherency of oxide particles dispersed in EUROFER97, *A. Ramar, N. Baluc and R. Schaublin*

High-temperature strength analysis of welded joint of RAFs by small punch test, *T. Kato, S.-i. Komazaki, Y. Kohno, H. Tanigawa and A. Kohyama*

Characteristic results and prospects of the 13Cr-1W-0.3Ti-0.3Y<sub>2</sub>O<sub>3</sub> ODS steel, *Ch.Ch. Eisel, M. Klimenkov, R. Lindau and A. Möslang*

Cyclically induced softening in reduced activation ferritic/martensitic steel before and after neutron irradiation, *S.W. Kim, H. Tanigawa, T. Hirose and A. Kohyama*

Stability of Y-Ti complex oxides in Fe-16Cr-0.1Ti ODS ferritic steel before and after heavy-ion irradiation, *H. Kishimoto, R. Kasada, O. Hashitomi and A. Kimura*

Some microstructural characterisations in a friction stir welded oxide dispersion strengthened ferritic steel alloy, *F. Legendre, S. Poissonnet, P. Bonnaille, L. Boulanger and L. Forest*

430

433

437

441

445

449

453

457

462

466

471

475

479

483

487

491

495

499

503

507

511

515

520

525

529

533

537

Influence of titanium on nano-cluster (Y, Ti, O) stability in ODS ferritic materials, <i>M. Ratti, D. Leuvre, M.H. Mathon and Y. de Carlan</i>	540	DC electrical conductivity of silicon carbide ceramics and composites for flow channel insert applications, <i>Y. Katoh, S. Kondo and L.L. Snead</i>	639
A radiation hardening model of 9%Cr–martensitic steels including dpa and helium, <i>R. Chaouadi, T. Hirai, J. Linke and G. Pintsuk</i>	544	Microstructure and mechanical properties of silicon carbide fiber-reinforced silicon carbide composite fabricated by electrophoretic deposition and hot-pressing, <i>K. Yoshida, K. Matsukawa and T. Yano</i>	643
Effect of Surface Preparation on CLAM/CLAM Hot Isostatic Pressing diffusion bonding joints, <i>C. Li, Q. Huang and P. Zhang</i>	550	Synthesis of $Ti_3SiC_2$ by high energy ball milling and reactive sintering from Ti, Si, and C elements, <i>F. Meng, L. Chaffron and Y. Zhou</i>	647
New insights into the structure of ODS particles in the ODS-Eurofer alloy, <i>M. Klimenkov, R. Lindau and A. Möslang</i>	553	Study on the weld characteristics of 316LN by magnetization measurement, <i>H.C. Kim, K. Kim, Y.S. Lee, S.Y. Cho and H. Nakajima</i>	650
TEM study of internal oxidation in an ODS-Eurofer alloy, <i>M. Klimenkov, R. Lindau and A. Möslang</i>	557	The microstructural evolution of precipitate strengthened copper alloys by varying temperature irradiation, <i>Y. Sumino, H. Watanabe and N. Yoshida</i>	654
Effects of the forming processes and $Y_2O_3$ content on ODS-Eurofer mechanical properties, <i>P. Olier, A. Bougault, A. Alamo and Y. de Carlan</i>	561	The influence of interstitial impurities on temperature ranges of deuterium retention in austenitic stainless steel 18Cr10NiTi, <i>I.M. Neklyudov, O.M. Morozov, V.G. Kulish, V.I. Zhurba, A.G. Galytsky and E.V. Piatenko</i>	658
Effect of thermal ageing on the impact fracture behaviour of Eurofer97 steel, <i>H. Hadraba and I. Dlouhy</i>	564	Precipitate evolution in low-nickel austenitic stainless steels during neutron irradiation at very low dose rates, <i>Y. Isobe, M. Sagisaka, F.A. Garner, S. Fujita and T. Okita</i>	661
<b>Section 6. Refractory alloys, ceramic composites and FCC metals and alloys</b>			
Correlation between hydrogen distribution in V–4Cr–4Ti alloy and impact strength, <i>Y. Hatano, H. Homma, T. Sakamura, H. Saitoh, T. Nagasaka, T. Muroga and M. Matsuyama</i>	569	Influence of local crystallographic orientation on short crack propagation in high cycle fatigue of 316LN steel, <i>E. FERRIE and M. Sauzay</i>	666
Self passivating W-based alloys as plasma-facing material, <i>F. Koch, S. Köppl and H. Bolt</i>	572	<b>Section 7. Chemical compatibility and coating</b>	
Environmental effects on irradiation creep behavior of highly purified V–4Cr–4Ti alloys (NIFS-Heats) irradiated by neutrons, <i>K. Fukumoto, M. Narui, H. Matsui, T. Nagasaka, T. Muroga, M. Li, D.T. Hoelzer and S.J. Zinkle</i>	575	Compatibility of interfaces and fibers for SiC-composites in fusion environments, <i>C.H. Henager Jr. and R.J. Kurtz</i>	670
High temperature tensile properties and their application to toughness enhancement in ultra-fine grained W-(0–1.5)wt% TiC, <i>H. Kurishita, S. Matsuo, H. Arakawa, M. Narui, M. Yamazaki, T. Sakamoto, S. Kobayashi, K. Nakai, T. Takida, K. Takebe, M. Kawai and N. Yoshida</i>	579	Calculation of dissolution/deposition rates in flowing eutectic Pb–17Li with the MATLIM code, <i>H. Steiner, W. Krauss and J. Konys</i>	675
The mechanical properties of tungsten grown by chemical vapour deposition, <i>J.D. Murphy, A. Giannattasio, Z. Yao, C.J.D. Hetherington, P.D. Nellist and S.G. Roberts</i>	583	Compatibility behavior of EUROFER steel in flowing Pb–17Li, <i>J. Konys, W. Krauss, J. Novotny, H. Steiner, Z. Voss and O. Wedemeyer</i>	678
Mechanical alloying process of vanadium powder with 1.7 wt.% Y addition, <i>K. Nakai, S. Kobayashi, M. Hidaka, T. Sakamoto and H. Kurishita</i>	587	Deuterium diffusion in a chemical densified coating observed by NRA, <i>I. Takagi, T. Kobayashi, Y. Ueyama, H. Moriyama, M. Nakamichi, H. Nakamura and K. Hayashi</i>	682
Experimental investigation of the fracture toughness of polycrystalline tungsten in the brittle and semi-brittle regime, <i>D. Rupp and S.M. Weygand</i>	591	Metallurgical study on corrosion of austenitic steels in molten salt LiF–BeF <sub>2</sub> (Flibe), <i>M. Kondo, T. Nagasaka, A. Sagara, N. Noda, T. Muroga, Q. Xu, M. Nagura, A. Suzuki and T. Terai</i>	685
Mechanical properties of neutron-irradiated vanadium alloys in a liquid-sodium environment, <i>H. Kuroiwa, K.-i. Fukumoto, M. Narui, H. Matsui and X. Qiu</i>	594	Evaluation of interface strength between metal and ceramics to be utilized for development of fusion reactor components, <i>M. Satou, T. Yamakawa, A. Hasegawa and K. Abe</i>	689
The microstructure of laser welded Y doped V–4Cr–4Ti alloys after ion irradiation, <i>H. Watanabe, A. Higashijima, N. Yoshida, T. Nagasaka and T. Muroga</i>	598	Impact of ceramic coating deposition on the tritium permeation in the Japanese ITER-TBM, <i>M. Nakamichi, H. Nakamura, K. Hayashi and I. Takagi</i>	692
High temperature deformation of V-1.6Y-8.5W-(0.08, 0.15)C alloys, <i>T. Sakamoto, H. Kurishita, S. Kobayashi and K. Nakai</i>	602	Conception of operation of in situ oxide coating as applied to V/Li blanket, <i>O. Yeliseyeva, T. Muroga, Z. Yao and V. Tsisar</i>	696
Microstructure of creep-deformed V–4Cr–4Ti strengthened by precipitation and cold rolling, <i>T. Muroga, T. Nagasaka, J.M. Chen, Y.F. Li and H. Watanabe</i>	606	Hydrogen permeation through steel coated with erbium oxide by sol-gel method, <i>Z. Yao, A. Suzuki, D. Levchuk, T. Chikada, T. Tanaka, T. Muroga and T. Terai</i>	700
Prediction of radiation-induced yield stress increment in austenitic stainless steels by using a computational approach, <i>C. Shin, J. Kwon and W. Kim</i>	610	Stress corrosion cracking susceptibility of a reduced-activation martensitic steel F82H, <i>Y. Miwa, S. Jitsukawa and T. Tsukada</i>	703
Characterization of novel W alloys produced by HIP, <i>M.A. Monge, M.A. Auger, T. Leguey, Y. Ortega, L. Bolzoni, E. Gordo and R. Pareja</i>	613	Recrystallized graphite behavior as the first wall material in Globus-M spherical tokamak, <i>V.K. Gusev, V.Kh. Alimov, I.I. Arkhipov, M. Balden, E.A. Denisov, A.E. Gorodetsky, A.A. Kurdumov, T.N. Kompaniec, V.M. Lebedev, N.V. Litunovsky, I.V. Mazul, A.N. Novokhatsky, Yu.V. Petrov, N.V. Sakharov, V.M. Sharapov, E.I. Terukov, I.N. Trapeznikova, J. Roth, A.P. Zakharov and R.Kh. Zalavutdinov</i>	708
Irradiation creep of the US Heat 832665 of V–4Cr–4Ti, <i>M. Li, D.T. Hoelzer, M.L. Grossbeck, A.F. Rowcliffe, S.J. Zinkle and R.J. Kurtz</i>	618	Initial characterization of V–4Cr–4Ti and MHD coatings exposed to flowing Li, <i>B.A. Pint, S.J. Pawel, M. Howell, J.L. Moser, G.W. Garner, M.L. Santella, P.F. Tortorelli, F.W. Wiffen and J.R. DiStefano</i>	712
Recent advances and issues in development of silicon carbide composites for fusion applications, <i>T. Nozawa, T. Hinoki, A. Hasegawa, A. Kohyama, Y. Katoh, L.L. Snead, C.H. Henager Jr. and J.B.J. Hegeman</i>	622	Fluoridation and oxidation characteristics of JLF-1 and NIFS-HEAT-2 low-activation structural materials, <i>T. Nagasaka, M. Kondo, T. Muroga, N. Noda, A. Sagara, O. Motojima, A. Suzuki and T. Terai</i>	716
Compatibility between SiC and Li ceramics for solid breeding blanket system, <i>S. Nogami, A. Hasegawa, T. Murayama, N. Otake, M. Satou and K. Abe</i>	628	<b>Section 8. Materials for plasma-facing components</b>	
Design and installation of DC plasma reactor for SiC nanoparticle production, <i>I.K. Yu, J.H. Rhee, S. Cho and H.K. Yoon</i>	631	European effort towards consolidating the design and manufacture of the ITER in-vessel components, <i>G. Federici</i>	
Microstructural optimization of high-temperature SiC/SiC composites by NITE process, <i>K. Shimoda, J.S. Park, T. Hinoki and A. Kohyama</i>	634		

Simultaneous irradiation effects of hydrogen and helium ions on tungsten, <i>Y. Ueda, M. Fukumoto, J. Yoshida, Y. Ohtsuka, R. Akiyoshi, H. Iwakiri and N. Yoshida</i>	725	Lithium capillary porous system behavior as PFM in FTU tokamak experiments, <i>M.L. Apicella, V. Lazarev, I. Lyublinski, G. Mazzitelli, S. Mirnov and A. Vertkov</i>	821
Overview of long-term fuel inventory and co-deposition in castellated beryllium limiters at JET, <i>M.J. Rubel, J.P. Coad and D. Hole, JET-EFDA Contributors</i>	729	Effect of irradiation temperature and dose on mechanical properties and fracture characteristics of Cu/SS joints for ITER, <i>S.A. Fabritsiev, A.S. Pokrovsky, A. Peacock, M. Roedig, J. Linke, A.A. Gervash and V.R. Barabash</i>	824
High heat load properties of ultra fine grained tungsten, <i>Z. Zhou, J. Linke, G. Pintsuk, J. Du, S. Song and C. Ge</i>	733	Characterization of CuCrZr and CuCrZr/SS joint strength for different blanket components manufacturing conditions, <i>O. Gillia, L. Briottet, I. Chu, P. Lemoine, E. Rigal and A. Peacock</i>	830
Deuterium retention of ferritic steel irradiated by energetic hydrogen ions, <i>T. Hino, Y. Katada, Y. Yamauchi, M. Akiba, S. Suzuki and T. Ezato</i>	736	Evaluation of W–Si–C thick coating as a plasma facing material, <i>H.K. Seok, K.H. Jung, Y.C. Kim, J.-H. Shim, D.-I. Kim, S.-H. Han, K.H. Baik and P.-R. Cha</i>	834
Material mixing on plasma-facing components: Compound formation, <i>M. Psoda, M. Rubel, G. Sergienko, P. Sundelin and A. Pospieszczyk</i>	740	Mechanical properties of SiC long fibre reinforced copper, <i>A. Brendel, V. Paffenholz, Th. Köck and H. Bolt</i>	837
Evaporation and vapor shielding of CFC targets exposed to plasma heat fluxes relevant to ITER ELMs, <i>V.M. Safronov, N.I. Arkhipov, I.S. Landman, S.E. Pestchanyi, D.A. Toporkov and A.M. Zhitlukhin</i>	744	High temperature irradiation damage of carbon materials studied by laser Raman spectroscopy, <i>M. Yoshida, T. Tanabe, N. Ohno, M. Yoshimi and S. Takamura</i>	841
Damage modelling in plasma facing components, <i>E. Martin, G. Camus, J. Schlosser and G. Chevet</i>	747	Power operation with reduced heat transmitting tiles at core supra, <i>R. Mitteau, J. Schlosser, M. Lipa and A. Durocher</i>	844
Enhanced erosion of tungsten plasma-facing components subject to simultaneous heat pulses and deuterium plasma, <i>K.R. Umstadter, R. Doerner and G. Tynan</i>	751	R&D of joining technology for SiC components with channel, <i>H.-C. Jung, Y.-H. Park, J.-S. Park, T. Hinoki and A. Kohyama</i>	847
High-temperature transient surface heating experiments on carbon in Be-seeded deuterium plasmas, <i>J. Hanna, M.J. Baldwin, R.P. Doerner, D. Nishijima and R. Seraydarian</i>	756	3D-AP and positron annihilation study of precipitation behavior in Cu–Cr–Zr alloy, <i>M. Hatakeyama, T. Toyama, J. Yang, Y. Nagai, M. Hasegawa, T. Ohkubo, M. Eldrup and B.N. Singh</i>	852
Evaluation of the erosion on the CFC tiles of the ITER divertor by means of FE calculations, <i>J. Schlosser, C. Lowry, B. Riccardi, E. D'Agata, J. Bouvet and M. Merola</i>	760	Examination of W7-X target elements after high heat flux testing, <i>M. Missirlian, J. Boscary, A. Durocher, J. Schlosser, H. Greuner and L.S. Sigl</i>	856
Thermo-oxidation of tokamak carbon dust, <i>J.W. Davis, B.W.N. Fitzpatrick, J.P. Sharpe and A.A. Haasz</i>	764	An operational non-destructive examination technique for ITER Divertor plasma facing components, <i>A. Durocher, F. Escourbiac, J.L. Farjon, N. Vignat, F. Cismondi, M. Merola and B. Riccardi</i>	860
Hydrogen behavior in damaged tungsten by high-energy ion irradiation, <i>M. Fukumoto, H. Kashiwagi, Y. Ohtsuka, Y. Ueda, Y. Nobuta, J. Yagyu, T. Arai, M. Taniguchi, T. Inoue and K. Sakamoto</i>	768	Interface strength measurement of tungsten coatings on F82H substrates, <i>H. Kim, J. El-Awady, V. Gupta, N. Ghoniem and S. Sharafat</i>	863
Cyclic heat load testing of improved CFC/Cu bonding for the W 7-X divertor targets, <i>H. Greuner, B. Bösirith, J. Boscary, P. Chaudhuri, J. Schlosser, T. Friedrich, A. Plankensteiner and R. Tivey</i>	772	Cleaning surface treatments for the fabrication of ITER First Wall panels by HIP, <i>P.-E. Frayssines, P. Bucci, E. De Vito, E. Rigal and P. Lorenzetto</i>	866
Visualization of hydrogen distribution around blisters by tritium radio-luminography, <i>T. Hoshihira, T. Otsuka and T. Tanabe</i>	776		
Failure behaviors of vacuum plasma sprayed tungsten coatings for plasma facing application, <i>F.L. Chong, J.L. Chen, J.G. Li and X.B. Zheng</i>	780	<b>Section 9. Materials issues in chamber technologies and ITER test blanket modules</b>	
Characterization of thick plasma spray tungsten coating on ferritic/martensitic steel F82H for high heat flux armor, <i>Y. Yahiro, M. Mitsuhashi, K. Tokunaka, N. Yoshida, T. Hirai, K. Ezato, S. Suzuki, M. Akiba and H. Nakashima</i>	784	Micro-particles in ITER: A comprehensive review, <i>C. Grisolia, S. Rosanvallon, Ph. Sharpe and J. Winter</i>	871
Transmutation and activation analysis for divertor materials in a HCLL-type fusion power reactor, <i>U. Fischer, P. Pereslavtsev, A. Möslang and M. Rieth</i>	789	Tritium release from beryllium articles for use in fusion devices, <i>J. Tiliks, G. Kizane, A. Vitiš, E. Kolodinska, J. Tiliks Jr. and I. Reinholds</i>	874
Erosion of a TiAl intermetallic alloy under conditions simulating plasma disruptions, <i>B.A. Kalin, V.L. Yakushin, V.I. Polsky, P.S. Dzharmaev, V.T. Fedotov, O.N. Sevryukov, M.Yu. Golikov and M.V. Zolotarev</i>	793	The activation system EASY-2007, <i>R.A. Forrest and J. Kopecky</i>	878
Microstructural and thermo-mechanical characterization of carbon/carbon composites, <i>J. Compan, T. Hirai, G. Pintsuk and J. Linke</i>	797	Dust in ITER: Diagnostics and removal techniques, <i>S. Rosanvallon, C. Grisolia, P. Delaporte, J. Worms, F. Onofri, S.H. Hong, G. Counsell and J. Winter</i>	882
Ti-doped isotropic graphite: A promising armour material for plasma-facing components, <i>C. García-Rosales, I. López-Galilea, N. Ordás, C. Adelhelm, M. Balden, G. Pintsuk, M. Grattarola and C. Gualco</i>	801	Hydrogen diffusion in Fe–Ni alloys around room temperature, <i>T. Otsuka, S. Sasabe and T. Tanabe</i>	884
Improvement of thermal shock resistance of isotropic graphite by Ti-doping, <i>I. López-Galilea, N. Ordás, C. García-Rosales and S. Lindig</i>	805	Torus configuration and materials selection on a fusion DEMO reactor, SlimCS, <i>K. Tobita, S. Nishio, H. Tanigawa, M. Enoeda, T. Isono, H. Nakamura, D. Tsuru, S. Suzuki, T. Hayashi, K. Tsuchiya, T. Hayashi, T. Nishitani and The DEMO design team</i>	888
Castellated structures for ITER: Differences of impurity deposition and fuel accumulation in the toroidal and poloidal gaps, <i>A. Litnovsky, V. Philipps, P. Wienhold, K. Krieger, A. Kirschner, D. Borodin, G. Sergienko, O. Schmitz, A. Kreter, U. Samm and TEXTOR Team, S. Richter and U. Breuer</i>	809	Controlled carbon deposit removal by oxygen radicals, <i>A. Drenik, A. Vesel and M. Mozetič</i>	893
Helium-cooled divertor for DEMO: Manufacture and high heat flux tests of tungsten-based mock-ups, <i>P. Norajitra, A. Gervash, R. Giniyatulin, T. Hirai, G. Janeschitz, W. Krauss, V. Kuznetsov, A. Makhankov, I. Mazul, I. Ovchinnikov, J. Reiser and V. Widak</i>	813	Materials and design interface, <i>S. Sharafat, G.R. Odette and J. Blanchard</i>	896
Application of a fiber-reinforced copper matrix composite cooling tube to a water-cooled mono-block divertor component: A design study, <i>J.H. You</i>	817	A description of bubble growth and gas release of helium implanted tungsten, <i>S. Sharafat, A. Takahashi, Q. Hu and N.M. Ghoniem</i>	900
		Insulating performance requirements for the coating material in the ITER DFL electromagnetic TBM based on the MHD analysis, <i>H. Chen, T. Zhou, R. Lü, Z. Yang, Z. Wu and D. Xia</i>	904
		Effect of activation cross section uncertainties in the assessment of primary damage for MFE/IFE low-activation steels irradiated in IFMIF, <i>O. Cabellos, J. Sanz, N. García-Herranz and B. Otero</i>	908
		Reduced softening of EUROFER 97 under thermomechanical and multiaxial fatigue loading and its impact on the design rules, <i>J. Aktaa, M. Weick and C. Petersen</i>	911
		Modelling of radiation impact on ITER Beryllium wall, <i>I.S. Landman and G. Janeschitz</i>	915

Erosion simulation of first wall beryllium armour under ITER transient heat loads, <i>B. Bazylev, G. Janeschitz, I. Landman, S. Pestchanyi and A. Loarte</i>	919	absorption fine structure analysis, <i>T. Yoshida, S. Muto, L. Yuliati, H. Yoshida and Y. Inada</i>	1010
Ferritic–Martensitic steel Test Blanket Modules: Status and future needs for design criteria requirements and fabrication validation, <i>J.-F. Salavy, G. Aiello, P. Aubert, L.V. Boccaccini, M. Daichendt, G. De Dinechin, E. Diegele, L.M. Giancarli, R. Lässer, H. Neuberger, Y. Poitevin, Y. Stephan, G. Rampal and E. Rigal</i>	922	Development of multi-functional NITE-porous SiC for ceramic insulators, <i>Y.-H. Park, T. Hinoki and A. Kohyama</i>	1014
Development of fabrication technology and investigation of properties of steel-to-bronze joints suggested for ITER HHF components, <i>G.M. Kalinin, V.Ya. Abramov, A.A. Gervash, V.B. Zolotarev, N.S. Krestnikov, I.V. Mazul, Yu.S. Strebkov and S.A. Fabritsiev</i>	927	High-temperature neutron irradiation effects on CVD-diamond, silicon and silicon carbide, <i>T. Yano, T. Sawabe, K. Yoshida and Y. Yamamoto</i>	1018
Nitrogen segregation and blister formation of 316LN austenitic steel during electron beam welding tests for ITER gravity supports, <i>P.Y. Lee, B.L. Hou, J.H. Wu, D. Yang, G.R. Zhang and C.P. Zhang</i>	931	Temperature measurement by thermal luminescence of partially replaced core optical fiber, <i>T. Shikama, K. Toh, S. Nagata, B. Tsuchiya and Y. Ohno</i>	1023
<b>Section 10. Cross cutting fusion–fission materials issues including irradiation facilities</b>		Effect of 14-MeV neutrons on strontium–aluminate-based long-lasting phosphor, <i>K. Toh, T. Shikama, H. Katsui, S. Nagata, B. Tsuchiya, M. Yamauchi and T. Nishitani</i>	1027
Building on knowledge base of sodium cooled fast spectrum reactors to develop materials technology for fusion reactors, <i>B. Raj and K. Bhanu Sankara Rao</i>	935	Radiation induced absorption and luminescence of selected alternative radiation resistant glasses, <i>A. Moróño, P. Martín, A. Gusarov and E.R. Hodgson</i>	1030
Start of the engineering validation and design phase of IFMIF, <i>P. Garin</i>	944	Gamma irradiation induced defects in different types of fused silica, <i>M. León, P. Martín, A. Ibarra and E.R. Hodgson</i>	1034
Fission–fusion neutron source, <i>J. Yu and G. Yu</i>	949	Degradation of reflectivity in stainless steel mirrors under irradiation with low-energy helium ions, <i>H. Urabe, M. Miyamoto, K. Ono, M. Tokitani and N. Yoshida</i>	1038
Design optimization and experimental testing of the High-Flux Test Module of IFMIF, <i>D. Leichte, F. Arbeiter, B. Dolensky, U. Fischer, S. Gordeev, V. Heinzl, T. Ihli, A. Moeslang, S.P. Simakov, V. Slobodchuk and E. Stratmanns</i>	954	TIEMF effect in ceramic coated cables, <i>R. Vila and E.R. Hodgson</i>	1041
Experimental investigation of the IFMIF target mock-up, <i>N. Loginov, A. Mikheyev, V. Morozov, Yu. Aksenov, M. Arnol'dov, L. Berensky, V. Fedotovskiy, V. Chernov and H. Nakamura</i>	958	Damage process and luminescent characteristics in silica glasses under ion irradiation, <i>S. Nagata, H. Katsui, B. Tsuchiya, A. Inouye, S. Yamamoto, K. Toh and T. Shikama</i>	1045
Mechanical properties of F82H/316L and 316L/316L welds upon the target back-plate of IFMIF, <i>K. Furuya, M. Ida, M. Miyashita and H. Nakamura</i>	963	Effect of ion beam and neutron irradiations on the luminescence of polycrystalline Ce-doped $Y_3Al_5O_{12}$ ceramics, <i>T. Hirouchi, M. Nishiura, T. Nagasaka, T. Ido, D. Funaki, T. Kobuchi, A. Okamoto, S. Kitajima, M. Sasao, K. Fujioka, M. Isobe and T. Mutoh</i>	1049
JANNUS: A multi-irradiation platform for experimental validation at the scale of the atomistic modelling, <i>Y. Serruys, P. Trocellier, S. Miro, E. Bordas, M.O. Ruault, O. Käitäsos, S. Henry, O. Leseigneur, Th. Bonnailie, S. Pellegrino, S. Vaubaillon and D. Uriot</i>	967	Gas bubble network formation in irradiated beryllium pebbles monitored by X-ray microtomography, <i>A. Möslang, R.A. Pieritz, E. Boller and C. Ferrero</i>	1052
A numerical study of the size effect in fracture mechanical bending tests with the cohesive zone method, <i>S.M. Weygand and J. Aktaa</i>	971	Compatibility between Be–V Alloy and F82H steel, <i>K. Tsuchiya, Y. Namekawa and T. Ishida</i>	1056
Statistical evaluation of anisotropic fracture behavior of ODS ferritic steels by using small punch tests, <i>N. Okuda, R. Kasada and A. Kimura</i>	974	Thermo-mechanical analyses of HELICA and HEXCALIBER mock-ups, <i>Y. Gan and M. Kamlah</i>	1060
In-pile testing of ITER first wall mock-ups at relevant thermal loading conditions, <i>N. Litunovskiy, A. Gervash, P. Lorenzetto, I. Mazul and R. Melder</i>	979	Effects of multi-ion irradiation on microstructural changes in lithium titanate, <i>D. Yamaki, N. Okubo, T. Nakazawa and S. Jitsukawa</i>	1065
Radiation effects in IFMIF Li target diagnostic systems, <i>J. Molla, R. Vila, T. Shikama, H. Horiike, S. Simakov, M. Ciotti and A. Ibarra</i>	983	Thermal conductivity of sintered lithium orthosilicate compacts, <i>B. Löbbecke, R. Knitter, M. Rohde and J. Reimann</i>	1068
Thermal-stress analysis of IFMIF target back-wall made of reduced-activation ferritic steel and austenitic stainless steel, <i>M. Ida, T. Chida, K. Furuya, E. Wakai, H. Nakamura and M. Sugimoto</i>	987	Reduction of impurities and activation of lithium orthosilicate breeder materials, <i>R. Knitter, U. Fischer, S. Herber and C. Adelhelm</i>	1071
Neutron induced activation in the EVEDA accelerator materials: Implications for the accelerator maintenance, <i>J. Sanz, M. García, P. Sauvan, D. López, C. Moreno, A. Ibarra and L. Sedano</i>	991	Study on damage process and hydrogen effect in $Li_2ZrO_3$ by using ion-induced luminescence, <i>H. Katsui, S. Nagata, K. Toh, B. Tsuchiya and T. Shikama</i>	1074
Evolving targets for DEMO: Implications for materials development, <i>I. Cook, D. Maisonnier and D. Ward</i>	994	Experimental characterization of ceramic pebble beds, <i>N. Zaccari and D. Aquaro</i>	1078
<b>Section 11. Functional materials</b>		Design and trial fabrication of a dismantling apparatus for irradiation capsules of solid tritium breeder materials, <i>K. Hayashi, T. Nakagawa, S. Onose, T. Ishida, M. Nakamichi, H. Takatsu, M. Nakamura and T. Noguchi</i>	1083
Insulator degradation due to radiation induced ion and dark currents in vacuum, <i>E.R. Hodgson, A. Moróño and S.M. Gonzalez</i>	999	Modeling of Li diffusivity in $Li_2O$ by molecular dynamics simulation, <i>T. Oda and S. Tanaka</i>	1087
Electrical surface degradation of electron irradiated sapphire and silica, <i>A. Moróño, E.R. Hodgson and S.M. González de Vicente</i>	1002	Tritium release from lithium orthosilicate pebbles deposited with palladium, <i>K. Munakata, T. Shinozaki, K. Inoue, S. Kajii, Y. Shinozaki, T. Takeishi, R. Knitter, N. Bekris, T. Fujii, H. Yamana and K. Okuno</i>	1091
Surface electrical degradation due to ion bombardment of ITER insulators, <i>S.M. Gonzalez de Vicente, A. Moróño, D.E. Hole and E.R. Hodgson</i>	1006	Mechanical properties of silicon carbide sintered with additive $Y_3Al_5O_{12}$ , <i>B.-A. Kim, H.-K. Yoon and S.-H. Noh</i>	1095
Clustering of germanium atoms in silica glass responsible for the 3.1 eV emission band studied by optical absorption and X-ray		Crystal structure of advanced lithium titanate with lithium oxide additives, <i>T. Hoshino, K. Sasaki, K. Tsuchiya, K. Hayashi, A. Suzuki, T. Hashimoto and T. Terai</i>	1098
		Control of molten salt corrosion of fusion structural materials by metallic beryllium, <i>P. Calderoni, P. Sharpe, H. Nishimura and T. Terai</i>	1102
		Preliminary test for reprocessing technology development of tritium breeders, <i>T. Hoshino, K. Tsuchiya, K. Hayashi, M. Nakamura, H. Terunuma and K. Tatenuma</i>	1107