

Abrasion of cermets

Pirso, Jüri; Viljus, Mart; Juhani, Kristjan; Letunovitš, Sergei Advances in engineering research. Volume 3 2011 / p. 397-426

Abrasive erosion of chromium carbide based cermets

Pirso, Jüri; Viljus, Mart; Kübarsepp, Jakob 9th Nordic Symposium on Tribology NORDTRIB 2000 : Porvoo, Finland, 11-14 June 2000. Vol. 3 2000 / p. 959-967 : ill

Abrasive erosion of non-tungsten cemented carbides

Pirso, Jüri; Kallas, Paul Powder Technology 95 : Vth Baltic Conference, November 7-8, 1995, Tallinn 1995 / I. 30-33
https://www.ester.ee/record=b1492085*est

Abrasive erosion of titanium carbide-base cermets

Pirso, Jüri; Kübarsepp, Jakob; Letunovitš, Sergei NORDTRIB '98 : proceedings of the 8th International Conference on Tribology, Ebeltoft, Denmark, 7-10 June 1998. Vol. 1 1998 / p. 231-237: ill

Abrasive impact wear of WC-Co and TiC-NiMo cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei; Tarraste, Marek Proceedings of the 8th International Conference of DAAAM Baltic Industrial Engineering, 19-21st April 2012, Tallinn, Estonia. 2 2012 / p. 621-626 : ill
https://www.researchgate.net/publication/286139638_Abrasive_impact_wear_of_WC-Co_and_TiC-NiMo_cermets

Abrasive wear and erosion of titanium carbide based cermets

Pirso, Jüri; Kübarsepp, Jakob EURO PM'99 : European Conference on Advances in Hard Materials Production : Turin, Italy, November 8-10, 1999 : proceedings 1999 / p. 423-428: ill

Abrasive wear energy of powder materials

Kallas, Paul; Pirso, Jüri Materials Engineering - 96 : materials of VI-th International Baltic Conference 1996 / p. 34-37: ill

Abrasive wear of chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Tribologia : Finnish journal of tribology 2008 / 2/3, p. 23-32 : ill

Abrasive wear of chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Proceedings of Nordtrib 2008 : 13th Nordic Symposium on Tribology : Tampere, Finland, 10-13 June, 2008 2008 / ? p

Abrasive wear of Cr₃C₂ base cermets

Pirso, Jüri; Viljus, Mart; Kübarsepp, Jakob; Hussainova, Irina Abstracts of papers from 2nd World Tribology Congress 2001 / p. 158

Abrasive wear of Cr₃C₂ base cermets [Electronic resource]

Pirso, Jüri; Viljus, Mart; Kübarsepp, Jakob; Hussainova, Irina WTC 2001 : 2nd World Tribology Congress : Vienna, Austria, 03-07 September 2001 2001 / [4] p. : ill. [CD-ROM]

Abrasive wear resistance of hardmetals

Pirso, Jüri; Liiskmann, Guido; Suominen, Sauli International Conference "Novel Processes and Materials in Powder Metallurgy" : PM-97 : November 24-28, 1997, Kiev : abstracts 1997 / p. 323

Abrasive wear resistance of hardmetals

Pirso, Jüri; Liiskmann, Guido; Suominen, Sauli International DAAAM : [DAAAM National Estonia] : proceedings of the 1st International Conference, 25-27th September 1997, Tallinn, Estonia 1997 / p. 141-144: ill

Abrasive wear resistance of powder composite materials : characterization and prediction

Veinthal, Renno; Kulu, Priit; Pirso, Jüri; Käerdi, Helmo; Tarbe, Riho Tribology 2008 : proceedings of the 9th International Tribology Conference : University of Pretoria, South Africa, 2-4 April 2008 2008 / p. 1.3(1)-1.3(10)

Abrasive wear resistance of TiC-NiMo cermets

Pirso, Jüri; Kübarsepp, Jakob International Conference Balttrib'99 : 21-22 September 1999, Kaunas, Lithuania : proceedings 1999 / p. 200-205: ill

Assessment of mechanically mixed layer developed during high temperature erosion of cermets

Antonov, Maksim; Hussainova, Irina; Pirso, Jüri; Volobujeva, Olga Wear 2007 / 2, p. 878-886 : ill

Assessment of the erosion resistance of carbides based cermets

Hussainova, Irina; Kübarsepp, Jakob; Pirso, Jüri Engineering Materials & Tribology : BALTMATTRIB - 2003 : 12th International Baltic Conference : October 2-3, 2003, Tallinn, Estonia : abstracts 2003 / p. 74

Balti Pulbertehnoloogia konverents Tallinnas

Pirso, Jüri Tehnikaülikool 1995 / 10. nov., lk. 5 https://www.ester.ee/record=b5309277*est

Behaviour of TiC-base cermets in different wear conditions

Kübarsepp, Jakob; Klaasen, Heinrich; Pirso, Jüri Wear 2001 / p. 229-234 : ill

Carbide grain and structure formation in Cr₃C₂-base cermets during sintering

Viljus, Mart; Traksmäa, Rainer; Pirso, Jüri Proceedings of Joint Nordic Conference in Powder Technology 2000 / p. 24

Carbide grain growth in Cr₃C₂-based cermets during sintering

Viljus, Mart; Pirso, Jüri; Traksmäa, Rainer Proceedings of the 2nd International Conference, 27-29th April 2000, Tallinn, Estonia / DAAAM International Vienna, DAAAM National Estonia 2000 / p. 159-162 : ill

Cermets with designed characteristics for wear and wear-corrosion working conditions

Pirso, Jüri; Kübarsepp, Jakob; Liiskmann, Guido Proceedings of Joint Nordic Conference in Powder Technology, November 26-27, Helsinki 1997 / p. 38

Characterisation of TiC powders milled by attritor technique

Letunovitš, Sergei; Kommel, Lembit; Viljus, Mart; Pirso, Jüri Proceedings of the 2nd International Conference, 27-29th April 2000, Tallinn, Estonia / DAAAM International Vienna, DAAAM National Estonia 2000 / p. 153-156 : ill

Characteristics and application of tungsten free cermets

Kübarsepp, Jakob; Pirso, Jüri; Reshetnjak, Heinrich Proceedings of Joint Nordic Conference in Powder Technology : May 5-6, 1999, Oslo, Norway 1999 / p. 19

Characteristics of titanium- and chromium carbide-base cermets and their application

Kübarsepp, Jakob; Pirso, Jüri; Annuka, Harri Proceedings of Joint Nordic Conference in Powder Technology, November 13-14, Copenhagen, 1996 1996 / p. 19

Characterization and prediction of abrasive wear of powder composite materials

Veinthal, Renno; Kulu, Priit; Pirso, Jüri; Käerdi, Helmo Wear 2009 / p. 2216-2222 : ill

Characterization and prediction of abrasive wear of powder composite materials

Veinthal, Renno; Kulu, Priit; Pirso, Jüri; Käerdi, Helmo Proceedings of Nordtrib 2008 : 13th Nordic Symposium on Tribology : Tampere, Finland, 10-13 June, 2008 2008 / ? p

Characterization of composite thermal spray powders

Peetsalu, Priidu; Zimakov, Sergei; Pirso, Jüri; Mikli, Valdek; Tarbe, Riho; Kulu, Priit EURO PM2005 : congress & exhibition : 2-5 October 2005, Prague, Czech Republic : proceedings. Volume 2 2005 / p. 87-91

Characterization of powdermetal matrix composites for erosion wear applications

Veinthal, Renno; Kulu, Priit; Pirso, Jüri; Käerdi, Helmo Extended abstracts of 2006 Powder Metallurgy World Congress : Busan, Korea, September 24-28. 2 2006 / p. 1056

Characterization of WC-Co composite thermal spray powder and coating

Peetsalu, Priidu; Zimakov, Sergei; Pirso, Jüri; Mikli, Valdek; Tarbe, Riho; Kulu, Priit 15th International Baltic Conference "Engineering Materials & Tribology. Balttrib - 2006" : October 5-6, 2006, Tallinn, Estonia : abstracts 2006 / p. 52-53

Characterization of WC-Co composite thermal spray powders and coatings

Peetsalu, Priidu; Zimakov, Sergei; Pirso, Jüri; Mikli, Valdek; Tarbe, Riho; Kulu, Priit Proceedings of the Estonian Academy of Sciences. Engineering 2006 / 4, p. 435-444 : ill

Characterization of WC-Co thermal spray coatings based on the composite powders

Peetsalu, Priidu; Zimakov, Sergei; Pirso, Jüri; Mikli, Valdek; Tarbe, Riho; Kulu, Priit Powder metallurgy progress : journal of science and technology of particle materials 2006 / p. 34-41 : ill

Chromium carbide based cermets as the wear resistant materials

Antonov, Maksim; Hussainova, Irina; Pirso, Jüri Proceedings of the 4th International Conference Industrial Engineering - New Challenges to SME : 29-30 April 2004, Tallinn, Estonia 2004 / p. 177-180 : ill

Comparison of wear resistance determined under different conditions of wear

Kulu, Priit; Pirso, Jüri; Vallikivi, Ahto; Ajaots, Mairo Proceedings of IRG-OECD 24th Meeting of the International Research Group of Wear of Engineering Materials : Portorož, Slovenia, 2003 2003 / [8] p

Corrigendum to "The influence of high energy milling and sintering parameters on reactive sintered (Ti, Mo)C-Ni

cermets [J. Alloys Compd. 636 (2015) 381–386] (S0925838815005009) (10.1016/j.jallcom.2015.02.071))
Jõelet, Marek; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart; Traksmäa, Rainer Journal of alloys and compounds 2018 / p. 128
<https://doi.org/10.1016/j.jallcom.2018.05.128> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Corrosion of titanium carbide cermets in mineral acids

Viljus, Mart; Pirso, Jüri; Kallavus, Urve Materials Engineering - 98 : materials of the VII-th International Baltic Conference, September 24-25, Jurmala, Latvia 1998 / p. 141-145 : ill

Deposition and characterization of refractory cermet particle reinforced Ni-based PTA hardfacings

Zikin, Arkadi; Yung, Der-Liang; Hussainova, Irina; Danninger, Herbert; Pirso, Jüri; Gavrilović-Wohlmuther, A. Proceedings of the 18th PLANSEE Seminar, 2013 2013

Developments in cermet design, technology and performance

Kübarsepp, Jakob; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart International journal of materials & product technology 2014 / p. 160-179 <https://doi.org/10.1504/IJMP.2014.064046> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Dry sliding wear of cermets

Viljus, Mart; Pirso, Jüri International journal of materials & product technology 2007 / 3/4, p. 468-486 : ill

Dry sliding wear of cermets under high-speed conditions

Pirso, Jüri; Ajaots, Maido; Viljus, Mart; Vallikivi, Ahto Engineering Materials & Tribology : BALTMATTRIB - 2003 : 12th International Baltic Conference : October 2-3, 2003, Tallinn, Estonia : abstracts 2003 / p. 76

Effect of carbide produces technique on the structure and properties of the Cr₃C₂-Ni cermets

Letunovitš, Sergei; Viljus, Mart; Pirso, Jüri Proceedings of the 3rd International Conference Industrial Engineering - New Challenges to SME : 25-27 April 2002, Tallinn, Estonia 2002 / p. 181-184 : ill

Effect of free carbon on the mechanical and tribological properties of cemented carbides

Joost, Renee; Pirso, Jüri; Tenno, Taavi; Viljus, Mart Proceedings of the 7th International Conference of DAAAM Baltic Industrial Engineering : 22-24th April 2010, Tallinn, Estonia. [II] 2010 / p. 450-455 : ill

Effect of oxidation on abrasive wear behaviour of TiC-based cermets in SiO₂ medium

Antonov, Maksim; Hussainova, Irina; Pirso, Jüri; Juhani, Kristjan Proceedings of the 7th International Conference of DAAAM Baltic Industrial Engineering : 22-24th April 2010, Tallinn, Estonia. [II] 2010 / p. 510-515 : ill

Effect of oxidation on abrasive wear behaviour of titanium carbide based composites in silica medium

Antonov, Maksim; Hussainova, Irina; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart Estonian journal of engineering 2010 / 4, p. 264-272 : ill

Effect of oxidation on abrasive wear of TiC-based cermets at various temperatures

Antonov, Maksim; Hussainova, Irina; Pirso, Jüri; Juhani, Kristjan Proceedings of 14th Nordic Symposium on Tribology : NORDTRIB 2010 : 08.06-11.06.2010, Storforsen, Sweden 2010 / p. 0054 [CD-ROM]

Effect of sinter/HIP technology on properties of TiC-NiMo cermets

Kollo, Lauri; Pirso, Jüri; Juhani, Kristjan Materials science forum 2007 / Progress in powder metallurgy, p. 1169-1172 : ill

Effect of temperature and load on three-body abrasion of cermets and steel

Antonov, Maksim; Hussainova, Irina; Veinthal, Renno; Pirso, Jüri Tribology international 2012 / p. 261-268 : ill
<https://www.sciencedirect.com/science/article/pii/S0301679X11002015>

Erosion and abrasion of chromium carbide based cermets produced by different methods

Hussainova, Irina; Pirso, Jüri; Antonov, Maksim; Juhani, Kristjan; Letunovitš, Sergei Wear 2007 / 2, p. 905-911 : ill

Erosion of cermets based on titanium and chromium carbides

Pirso, Jüri; Kübarsepp, Jakob International Conference Balttrib'99 : 21-22 September 1999, Kaunas, Lithuania : proceedings 1999 / p. 206-211 : ill

Erosion wear of reactive sintered WC-TiC-Co cermets

Tarraste, Marek; Juhani, Kristjan; Pirso, Jüri; Viljus, Mart Engineering materials & tribology XXII 2014 / p. 63-66
<https://doi.org/10.4028/www.scientific.net/KEM.604.63> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Conference proceedings at WOS](#) [Article at WOS](#)

Erosion-corrosion wear of WC-Co hardmetals in solid-liquid mixture

Viljus, Mart; Pirso, Jüri Materials Engineering & Balttrib 2001 : materials of the X-th International Baltic Conference : September 27-28, Jurmala, Latvia 2001 / p. 193-197 : ill

Features of wear of TiC-base hardmetals

Kübarsepp, Jakob; Reshetnjak, Heinrich; Pirso, Jüri; Annuka, Harri Proceedings of the World Congress and Exhibition on Powder Metallurgy, October 18-22, Granada, Spain 1998 / p. 75-79

Friction and dry sliding wear behaviour of cermets

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Wear 2006 / 7/8, p. 815-824 : ill

Friction and wear behaviour of cemented carbides

Pirso, Jüri; Letunovitš, Sergei; Viljus, Mart Wear 2004 / p. 257-265 : ill

High temperature erosion of Ti(Mo)C-Ni cermets

Hussainova, Irina; Pirso, Jüri; Antonov, Maksim; Juhani, Kristjan Wear 2009 / 11, p. 1894-1899 : ill

Impact wear of chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Materials science 2008 / p. 341-344 : ill

Impact wear of chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei 17th International Baltic Conference : Materials Engineering 2008 : November 6-7, Kaunas, Lithuania : abstracts of papers 2008 / p. 27-28

Influence of sintering technology on cermet performance

Kübarsepp, Jakob; Pirso, Jüri; Juhani, Kristjan BALTTTRIB'2013 : VII International Scientific Conference : 14-15 November 2013, Kaunas, Lithuania : proceedings 2013 / p. 56-61

https://www.researchgate.net/publication/384980961_Influence_of_sintering_technology_on_cermet_performance

25 aastat pulbermetallurgiauuringuid TPI-s

Kulu, Priit; Pirso, Jüri Tehnika ja Tootmine 1987 / lk. 15-16 https://www.ester.ee/record=b1073047*est

Kulumiskindlad vedelkütusepihustid

Pirso, Jüri Tehnika ja Tootmine 1986 / lk. 13-14 https://www.ester.ee/record=b1073047*est

Low temperature synthesized WC and its usability for fine-grained hardmetal

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Proceedings of EURO PM2006 Congress & Exhibition : Ghent, Belgium, October 23-25. 1, Hard materials 2006 / p. 281-286

Mechanical properties and features of erosion of cermets

Hussainova, Irina; Pirso, Jüri; Kübarsepp, Jakob Abstracts of 13th International Conference on Wear of Materials 2001 / p. 99

Mechanical properties and features of erosion of cermets

Hussainova, Irina; Kübarsepp, Jakob; Pirso, Jüri Wear 2001 / p. 818-825

Mechanical properties and microstructure of reactive sintered WC-TiC-Co cemented carbides

Tarraste, Marek; Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Proceedings of the 2012 Powder Metallurgy World Congress & Exhibition 2012

https://www.researchgate.net/publication/239937576_Mechanical_Properties_and_Microstructure_of_Reactive_Sintered_WC-TiC-Co_Cemented_Carbides

Mechanical properties of chromium carbide based cermets at micro-level

Hussainova, Irina; Jasiuk, Iwona; Du, X.; Cabassa, D.; Pirso, Jüri Advances in powder metallurgy & particulate materials 2008 : proceedings of the 2008 World Congress on Powder Metallurgy & Particulate Materials. IV 2009 / p. 180-191

Mechanical properties of chromium carbide based cermets at micro-level [Electronic resource]

Hussainova, Irina; Jasiuk, Iwona; Du, X.; Cabassa, D.; Pirso, Jüri Proceedings of the PM08 World Congress on Powder Metallurgy and Particulate Materials : Washington, NY, USA, June 12-16 2008 / ? p. [CD-ROM]

Mechanically activated synthesis of chromium carbide

Viljus, Mart; Letunovitš, Sergei; Traksmäa, Rainer; Pirso, Jüri Proceedings of the 3rd International Conference Industrial Engineering - New Challenges to SME : 25-27 April 2002, Tallinn, Estonia 2002 / p. 220-223 : ill

Mechanically activated synthesis of nanocrystalline chromium carbide powders

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Nanopowders, Nanostuctured Materials and Coatings : Network for Nanostructured Materials of ACC : March 17, 2005, Tallinn, Estonia : book of abstracts 2005 / p. 34-36 : ill

Mechanisms of fracture of PM materials and coatings by impact loading

Kallas, Paul; Kulu, Priit; Pirso, Jüri; Tümanok, Aleksei Deformation and fracture in structural PM materials : proceedings of the

Metallide tehnoloogia kateeder 1947-1992. Materjalitehnika instituut 1992-2016

2016 http://www.ester.ee/record=b4649065*est

Metalliõpetus ja metallide tehnoloogia

Arensburger, Daniil; Kulu, Priit; Kübarsepp, Jakob; Pirso, Jüri 1999 https://www.ester.ee/record=b1299973*est

Metalliõpetus ja metallide tehnoloogia

Kulu, Priit; Kübarsepp, Jakob; Laansoo, Andres; Pirso, Jüri; Valdma, Leo 2001 https://www.ester.ee/record=b1526273*est

Metalliõpetus ja metallide tehnoloogia

Kulu, Priit; Kübarsepp, Jakob; Laansoo, Andres; Pirso, Jüri; Valdma, Leo 2001 https://www.ester.ee/record=b1526274*est

Microstructural and mechanical characteristics of in situ synthesized chromium-nickel-graphite composites

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei; Juhani, Kristjan Materials science forum 2007 / Progress in powder metallurgy, p. 1209-1212 : ill <https://www.scientific.net/MSF.534-536.1209>

Microstructural and mechanical characteristics of in situ synthesized chromium-nickel-graphite composites

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei; Juhani, Kristjan Extended abstracts of 2006 Powder Metallurgy World Congress : Busan, Korea, September 24-28. 1 2006 / p. 631-632

Microstructural aspects of erosive wear of particulate reinforced composites

Hussainova, Irina; Pirso, Jüri Book of the abstracts of 2003 International Conference on Powder Metallurgy & Particulate Materials : Las Vegas, USA, 2003 2003 / p. 122

Microstructural aspects of erosive wear of particulate reinforced composites [Electronic resource]

Hussainova, Irina; Pirso, Jüri Proceedings of 2003 International Conference on Powder Metallurgy & Particulate Materials : PM2TEC2003 : Las Vegas, USA, 2003 2003 / [CD-ROM]

Microstructural characteristics and properties of reactive sintered TiC-based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei 17th Plansee Seminar : International Conference on High Performance P/M Materials : Reutte, Austria, 25-29.05.2009 : proceedings. Vol. 2 2009 / p. HM56/1-HM65/6

Microstructure and properties of reactive sintered TiC-based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei International Powder Metallurgy Congress & Exhibition : EURO PM2008 : 29th September - 1st October 2008, Mannheim, Germany : proceedings. Vol.3 2008 / p. 89-94 : ill

Microstructure evolution and changes in mechanical properties in WC-Co composites during recycling by oxidation-reduction process and sintering

Joost, Renee; Pirso, Jüri; Viljus, Mart 18th International Baltic Conference : Engineering Materials & Tribology : BALTMATTRIB-2009 : October 22-23, 2009, Tallinn, Estonia : abstracts 2009 / p. 29

Microstructure evolution in WC-Co composites during reactive sintering from nanocrystalline powders [Electronic resource]

Pirso, Jüri; Viljus, Mart; Joost, Renee; Juhani, Kristjan; Letunovitš, Sergei Advances in Powder Metallurgy & Particulate Materials 2008 2008 / [12] p. : ill. [CD-ROM]

Microstructure evolution of WC-TiC-CO cemented carbides during reactive sintering

Tarraste, Marek; Juhani, Kristjan; Pirso, Jüri TÜ ja TTÜ doktorikool "Funktsionaalsed materjalid ja tehnoloogiad" : 04.-05. märts 2014, Tartu 2014 / [1] p. : ill

Microstructure evolution of WC-TiC-Co cemented carbides during reactive sintering [Electronic resource]

Tarraste, Marek; Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Traksmäa, Rainer; Letunovitš, Sergei Proceedings of the 18th Plansee Seminar : International Conference on Refractory Metals and Hard Materials : Reutte/Austria, 3-7 June, 2013 2013 / p. HM 70/1-HM 70/7 [CD-ROM]

Microstructure formation and performance of reactive sintered titanium oxycarbide base ceramic-ceramic composites

Juhani, Kristjan; Kübarsepp, Jakob; Tarraste, Marek; Pirso, Jüri; Viljus, Mart Modern Materials and Manufacturing 2019 : 12th International DAAAM Baltic Conference and 27th International Baltic Conference BALTMATTRIB 2019. Selected, peer reviewed papers from the conference Modern Materials and Manufacturing 2019 (MMM 2019), April 24-26, 2019, Tallinn, Estonia 2019 / p. 131-135 : ill <https://www.scientific.net/KEM.799.131> https://www.ester.ee/record=b5235278*est <https://doi.org/10.4028/www.scientific.net/KEM.799.131> Conference proceeding at Scopus Article at Scopus

Microstructure formation of (Ti, Mo)C-Ni cermet

Jõelet, Marek; Pirso, Jüri; Juhani, Kristjan TÜ ja TTÜ doktorikool "Funktsionaalsed materjalid ja tehnoloogiad" : 04.-05. märts 2014, Tartu 2014 / [1] p. : ill

Non-tungsten and non-cobalt cermets with designed serviceability characteristics

Kübarsepp, Jakob; Pirso, Jüri; Annuka, Harri Abstracts of 7th International Exhibition and Symposium on Powder Metallurgy, March 18-21, Minsk 1997 / p. 91

Novel methods for hardmetal production and recycling = Uudsed meetodid WC-Co kõvasulamite valmistamiseks ja taaskasutamiseks

Joost, Renee 2010 https://www.ester.ee/record=b2604910*est

Optimierung des Herstellungsvorganges von Chromkarbid-Sinterlegierungen mit Hilfe Mathematischer Modell

Valdma, Leo; Pirso, Jüri Periodica polytechnica. Mechanical engineering = Машиностроение 1975 / p. 217-223 : ill
https://www.ester.ee/record=b1198774*est

Oxidation resistance of titanium and chromium carbide-base cermets

Pirso, Jüri; Kübarsepp, Jakob Proceedings of the Estonian Academy of Sciences. Engineering 1996 / 1, p. 4-13: ill

Paagutatud kõvasulamid

Pirso, Jüri Tehnika ja Tootmine 1984 / lk. 16-17 https://www.ester.ee/record=b1073047*est

Phase evolution, microstructure characteristics and properties of Cr₃C₂-Ni cermets prepared by reactive sintering

Juhani, Kristjan; Pirso, Jüri; Letunovitš, Sergei; Viljus, Mart International journal of materials & product technology 2011 / p. 75-91 : ill

Preparation of nanocrystalline WC powder and ultrafine WC-Co hardmetals

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Nanopowders, Nanostuctured Materials and Coatings : Network for Nanostructured Materials of ACC : March 17, 2005, Tallinn, Estonia : book of abstracts 2005 / p. 31-33 : ill

Processing and tribological properties of chromium carbide based cermets

Hussainova, Irina; Pirso, Jüri; Viljus, Mart Proceedings of World Congress on Powder Metallurgy and Particulate Materials, USA. Vol. 6 2002 / p. 166-173

Reactive carburizing sintering

Pirso, Jüri; Viljus, Mart; Juhani, Kristjan; Letunovitš, Sergei High temperature processes in chemical engineering 2010 / p. 309-334 : ill

Reactive carburizing sintering - a novel production method for high quality chromium carbide-nickel cermets

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei; Juhani, Kristjan International journal of refractory metals & hard materials 2006 / 3, p. 263-270 : ill <https://www.sciencedirect.com/science/article/abs/pii/S0263436805000909>

Reactive sintered chromium and titanium carbide-based cermets = Reaktsioonpaagutatud kroom- ja titaankarbiidsed kermised

Juhani, Kristjan 2009 https://www.ester.ee/record=b2498183*est

Reactive sintering - a new method for producing Cr₃C₂-Ni cermets

Viljus, Mart; Pirso, Jüri; Letunovitš, Sergei Engineering Materials & Tribology : BALTMATTRIB - 2003 : 12th International Baltic Conference : October 2-3, 2003, Tallinn, Estonia : abstracts 2003 / p. 29

Reactive sintering of bimodal WC-Co hardmetals

Tarraste, Marek; Juhani, Kristjan; Pirso, Jüri; Viljus, Mart Medžiagotyra = Materials science 2015 / p. 382-385 : ill
<https://doi.org/10.5755/j01.ms.21.3.7511> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Reactive sintering of Cr₃C₂-Ni cermets

Viljus, Mart; Pirso, Jüri Abstracts of the 12th Joint Nordic Conference in Powder Technology : Tampere, Finland, 2003 2003 / p. 24

Reactive sintering of WC-Cr-Co hardmetals [Electronic resource]

Juhani, Kristjan; Pirso, Jüri; Tarraste, Marek; Viljus, Mart; Letunovitš, Sergei Proceedings of the 18th Plansee Seminar : International Conference on Refractory Metals and Hard Materials : Reutte/Austria, 3-7 June, 2013 2013 / [CD-ROM]

Recycling of hardmetal scrap to WC-Co powder by oxidation-reduction process

Joost, Renee; Pirso, Jüri; Viljus, Mart Proceedings of the 6th International Conference of DAAAM Baltic "Industrial Engineering" : 24-26th April 2008, Tallinn, Estonia. [2] 2008 / p. 449-454 : ill
https://www.researchgate.net/publication/289593153_Recycling_of_hardmetal_scrap_to_wc-co_powder_by_oxidationreduction_process

Recycling of WC-Co hardmetals by oxidation and carbothermal reduction in combination with reactive sintering
Joost, Renee; Pirso, Jüri; Viljus, Mart; Letunovičs, Sergei; Juhani, Kristjan Estonian journal of engineering 2012 / p. 127-139 : ill

Sliding wear of chromium carbide based cermets under different wear conditions

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovičs, Sergei Proceedings of the 6th International Conference of DAAAM Baltic "Industrial Engineering" : 24-26th April 2008, Tallinn, Estonia. [2] 2008 / p. 455-459 : ill
<http://innomet.ttu.ee/daaam08/Online/Materials%20Engineering/Juhani.pdf>

Sliding wear of Cr₃C₂-Ni base cermets

Letunovičs, Sergei; Viljus, Mart; Pirso, Jüri Medžiagotyra = Materials science 2002 / 4, p. 477-480 : ill

Sliding wear of Cr₃C₂-Ni cermets

Letunovičs, Sergei; Viljus, Mart; Pirso, Jüri Abstracts of International Conference Materials Engineering and Tribology 2002 / p. 9

Sliding wear of the cermets

Letunovičs, Sergei; Pirso, Jüri; Viljus, Mart Engineering Materials & Tribology : BALTMATTRIB - 2003 : 12th International Baltic Conference : October 2-3, 2003, Tallinn, Estonia : abstracts 2003 / p. 70

Sliding wear of TiC-NiMo cermets

Pirso, Jüri; Letunovičs, Sergei; Viljus, Mart Tribology international 2004 / p. 817-824 : ill

Slurry erosion resistance of Cr₃C₂-Ni cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart International Powder Metallurgy Congress & Exhibition : EURO PM2009 : 12th October - 14th October 2009, Copenhagen, Denmark : proceedings. Vol.1 2009 / p. 305-310 : ill
https://www.researchgate.net/publication/288472950_Slurry_erosion_resistance_of_Cr3C2-Ni_cermets

Slurry erosion wear of TiC-NiMo and WC-Co cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart Proceedings of the 7th International Conference of DAAAM Baltic Industrial Engineering : 22-24th April 2010, Tallinn, Estonia. [11] 2010 / p. 456-461 : ill

Slurry erosion-corrosion of TiC-NiMo cermets

Pirso, Jüri; Viljus, Mart; Kübarsepp, Jakob Advances in Powder Metallurgy & Particulate Materials - 1999. Part 11, Cermets & Refractory Metals 1999 / p. 11-29 - 11-35 : ill

Slurry erosion-corrosion of TiC-NiMo cermets

Pirso, Jüri; Kübarsepp, Jakob Proceedings of the International Conference on Powder Metallurgy & Particulate Materials PM2TEC'99 : June 20-24, 1999, Vancouver, Canada 1999 / [7] p

Solid particle erosion of the Cr₃C₂-Ni metalmatrix composites

Antonov, Maksim; Hussainova, Irina; Pirso, Jüri OST-01 Symposium on Machine Design : Tallinn, Estonia, October 4-5, 2001 : proceedings 2001 / p. 233-243 : ill

Spark plasma sintering of WC hardmetals with Fe-based binder [Electronic resource]

Tarraste, Marek; Kübarsepp, Jakob; Juhani, Kristjan; Suurkivi, Taavi; Pirso, Jüri World PM2016 proceedings 2016 / [6] p. : ill. [USB]

Structure formation and characteristics of chromium carbide-iron-titanium cermets

Kolnes, Märt; Pirso, Jüri; Kübarsepp, Jakob; Viljus, Mart; Traksmäa, Rainer Proceedings of the Estonian Academy of Sciences 2016 / p. 138-143 : ill <https://doi.org/10.3176/proc.2016.2.09> https://artiklid.elnet.ee/record=b2768217*est [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Structure formation and distribution of elements in the TiC-NiMo cemented carbides

Viljus, Mart; Pirso, Jüri Powder Technology 95 : Vth Baltic Conference, November 7-8, 1995, Tallinn 1995 / I. 24-25
https://www.ester.ee/record=b1492085*est

Structure formation in Ti-C-Ni-Mo composites during reactive sintering

Viljus, Mart; Pirso, Jüri; Juhani, Kristjan; Letunovičs, Sergei Materials science = Medžiagotyra 2012 / p. 62-65 : ill

Structure formation of Cr₃C₂ - base cermets during sintering

Pirso, Jüri; Viljus, Mart Proceedings of 2000 Powder Metallurgy World Congress : November 12-16, 2000, Kyoto, Japan. Part 2 2000 / p. 1265-1268 : ill

Synthesis of an WC-Co composite material from the waste WC-Co bulk hardmetal

Joost, Renee; Pirso, Jüri; Viljus, Mart 17th International Baltic Conference : Materials Engineering 2008 : November 6-7, Kaunas, Lithuania : abstracts of papers 2008 / p. 28

Synthesis of nanocrystalline TiC powders by reactive milling

Viljus, Mart; Pirso, Jüri; Letunovitš, Sergei Nanopowders, Nanostructured Materials and Coatings : Network for Nanostructured Materials of ACC : March 17, 2005, Tallinn, Estonia : book of abstracts 2005 / p. 28-30 : ill

Synthesis of TiC by mechanical activation of powder components

Viljus, Mart; Traksmäa, Rainer; Letunovitš, Sergei; Pirso, Jüri EURO PM2001 : [European Congress and Exhibition on Powder Metallurgy] : October 22-24, 2001, Nice, France. Vol. 1 : proceedings 2001 / p. 194-198 : ill

Synthesis of TiC powder by mechanical activation

Viljus, Mart; Traksmäa, Rainer; Letunovitš, Sergei; Pirso, Jüri Materials Engineering & Balttrib 2001 : materials of the X-th International Baltic Conference : September 27-28, Jurmala, Latvia 2001 / p. 18-21 : ill

Technology and characterization of composite thermal spray powders

Peetsalu, Priidu; Zimakov, Sergei; Pirso, Jüri; Mikli, Valdek; Tarbe, Riho; Kulu, Priit Materials science = Medžiagotyra 2005 / 4, p. 385-389 : ill

The effect of carbon content on the mechanical and tribological properties of WC-Co cemented carbides

Joost, Renee; Pirso, Jüri; Viljus, Mart Proceedings of Nordtrib 2008 : 13th Nordic Symposium on Tribology : Tampere, Finland, 10-13 June, 2008 2008 / [8] p. : ill

The effect of Cr and C on the characteristics of WC-FeCr hardmetals [Electronic resource]

Tarraste, Marek; Juhani, Kristjan; Kübarsepp, Jakob; Pirso, Jüri; Mikli, Valdek Euro PM2015 Congress & Exhibition : proceedings : 4-7 October 2015, Reims Congress Centre, Reims, France 2015 / [6] p. : ill. [USB]

The effect of fine erodent retained on the surface during erosion of metals, ceramics, plastic, rubber and hardmetal

Antonov, Maksim; Pirso, Jüri; Goljandin, Dmitri; Vallikivi, Ahto; Hussainova, Irina Wear 2016 / p. 53-68 : ill

<https://doi.org/10.1016/j.wear.2016.02.018> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

The effect of VC, TiC and Cr₃C₂ on the microstructure and properties of WC-15CO hardmetals fabricated by the reactive sintering

Pirso, Jüri; Juhani, Kristjan; Tarraste, Marek; Viljus, Mart; Letunovitš, Sergei Proceedings of the 9th International Conference of DAAAM Baltic Industrial Engineering, 24-26th April 2014, Tallinn, Estonia 2014 / p. 383-388 : ill

The effect of VC, TiC and Cr₃C₂ on the microstructure and properties of WC-15Co hardmetals fabricated by the reactive sintering

Pirso, Jüri; Juhani, Kristjan; Tarraste, Marek; Viljus, Mart; Letunovitš, Sergei Proceedings of the 9th International Conference of DAAAM Baltic Industrial Engineering, 24-26th April 2014, Tallinn, Estonia 2014 / p. 383-388 : ill

The effects of impact variables and abrasive particle properties on the erosion of cermets

Hussainova, Irina; Pirso, Jüri; Kübarsepp, Jakob Abstracts of papers from 2nd World Tribology Congress 2001 / p. 73

The effects of impact variables and abrasive particle properties on the erosion of cermets [Electronic resource]

Hussainova, Irina; Pirso, Jüri; Kübarsepp, Jakob WTC 2001 : 2nd World Tribology Congress : Vienna, Austria, 03-07 September 2001 2001 / [4] p. : ill. [CD-ROM]

The features of wear and application of hardmetals

Kübarsepp, Jakob; Pirso, Jüri; Annuka, Harri Mekaaniset kulumisilmiöt ja kulutusta kestävät materiaalit : proceedings of spring seminar, June 8-10, 1998, Korpilahti, Finland 1998 / p. 14.1-14.5

The formation of reactive sintered (Ti, Mo)C-Ni cermet from nanocrystalline powders

Jõelet, Marek; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart; Traksmäa, Rainer International journal of refractory metals and hard materials 2014 / p. 284-290 : ill <https://doi.org/10.1016/j.ijrmhm.2013.12.016> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

The influence of carbon and molybdenum in reactive sintered (Ti, Mo)C-NiCr cermets [Electronic resource]

Jõelet, Marek; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart Euro PM2015 Congress & Exhibition : proceedings : 4-7 October 2015, Reims Congress Centre, Reims, France 2015 / [USB]

The influence of content and production parameters on the structure and mechanical properties of TiC-NiMo cemented carbides

Pirso, Jüri; Viljus, Mart Tallinna Tehnikaülikooli Toimetised 1994 / lk. 77-90: ill

The influence of Cr₃C₂ and VC as alloying additives on the microstructure and properties of reactive sintered WC-Co cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei; Tarraste, Marek Materials science = Medžiagotyra 2012 / p. 79-83

: ill <https://matsc.ktu.lt/index.php/MatSc/article/view/1347>

The influence of high energy milling and sintering parameters on reactive sintered (Ti, Mo)C-Ni cermets

Jõeleht, Marek; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart; Traksmäa, Rainer Journal of alloys and compounds 2015 / p. 381-386

: ill <https://doi.org/10.1016/j.jallcom.2015.02.071> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

The influence of processing parameters on mechanical properties of spark plasma sintered chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Tarraste, Marek; Viljus, Mart; Letunovičs, Sergei Materials Engineering 2017 : selected, peer reviewed papers from the 26th International Baltic Conference on Materials Engineering 2017, October 26-27, Kaunas, Lithuania 2017 / p. 162-166 <https://doi.org/10.4028/www.scientific.net/SSP.267.162> [Conference proceedings at Scopus](#) [Article at Scopus](#)

The influence of reactive sintering parameters on the structure and properties of Cr₃C₂-Ni cermets

Viljus, Mart; Letunovičs, Sergei; Traksmäa, Rainer; Pirso, Jüri Medžiagotyra = Materials science 2002 / 4, p. 473-476 : ill

The influence of reactive sintering parameters on the structure and properties of Cr₃C₂-Ni cermets

Viljus, Mart; Letunovičs, Sergei; Traksmäa, Rainer; Pirso, Jüri Abstracts of International Conference Materials Engineering and Tribology 2002 / p. 15

The influence of Sinter/HIP sintering on the properties of chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart Proceedings of European Powder Metallurgy Congress : EURO PM2007 : Toulouse (France), 15-17 October 2007. Vol. 1 2007 / p. 209-213

The influence of sinter/HIP technology on reactive sintering of chromium carbide based cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovičs, Sergei 18th International Baltic Conference : Engineering Materials & Tribology : BALTMATRIB-2009 : October 22-23, 2009, Tallinn, Estonia : abstracts 2009 / p. 23

The influence of sintering temperature of reactive sintered (Ti, Mo)C-Ni cermets

Jõeleht, Marek; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart Medžiagotyra = Materials science 2015 / p. 435-438 : ill

<https://doi.org/10.5755/j01.ms.21.3.7179> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

The influence of TiC powder to reactive sintered TiC-NiMo cermets microstructure and mechanical properties [Electronic resource]

Jõeleht, Marek; Pirso, Jüri; Juhani, Kristjan; Viljus, Mart Proceedings of the 18th Plansee Seminar : International Conference on Refractory Metals and Hard Materials : Reutte/Austria, 3-7 June, 2013 2013 / p. HM 71/1-HM 71/7 [CD-ROM]

The light weight boron carbide cermet as tribomaterial

Kommel, Lembit; Pirso, Jüri; Traksmäa, Rainer 9th Nordic Symposium on Tribology NORDTRIB 2000 : Porvoo, Finland, 11-14 June 2000. Vol. 3 2000 / p. 886-895 : ill

The oxidation of chromium and titanium carbide based hard metals

Pirso, Jüri; Liiskmann, Guido Powder Technology 95 : Vth Baltic Conference, November 7-8, 1995, Tallinn 1995 / I. 34-36: ill
https://www.ester.ee/record=b1492085*est

The structure and properties of recycled hardmetals

Joost, Renee; Pirso, Jüri; Viljus, Mart 17th Plansee Seminar : International Conference on High Performance P/M Materials : Reutte, Austria, 25-29.05.2009 : proceedings. Vol. 2 2009 / p. HM25/1-HM25/7

The structure formation of TiC-NiMo hardmetals during the sintering process

Viljus, Mart; Pirso, Jüri; Traksmäa, Rainer Proceedings of Joint Nordic Conference in Powder Technology : May 5-6, 1999, Oslo, Norway 1999 / p. 13

The wear resistance tests of cermets and relations between different types of wear

Joost, Renee; Letunovičs, Sergei; Pirso, Jüri; Juhani, Kristjan Proceedings of 14th Nordic Symposium on Tribology : NORDTRIB 2010 : 08.06-11.06.2010, Storforsen, Sweden 2010 / [6] p.: ill. [CD-ROM]

Thermal shock behaviour of cermets

Antonov, Maksim; Pirso, Jüri; Hussainova, Irina; Klug, Markus Engineering Materials & Tribology : BALTMATRIB - 2003 : 12th International Baltic Conference : October 2-3, 2003, Tallinn, Estonia : abstracts 2003 / p. 75

Thermal shock resistance of chromium carbide-based cermets

Antonov, Maksim; Pirso, Jüri Encyclopedia of thermal stresses 2014 / p. 5128-5135 : ill

Thermal spray coatings from WC-Co powders produced by mechanically activated synthesis [Electronic resource]

Zimakov, Sergei; Peetsalu, Priidu; Pirso, Jüri; Kulu, Priit; Mikli, Valdek Thermal spray 2006 : building on 100 years of success : proceedings of the 2006 International Thermal Spray Conference : May 15-18, 2006, Seattle, Washington, USA 2006 / p. 1387-1392

Three-body abrasive wear of cermets

Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei; Juhani, Kristjan; Joost, Renee Wear 2011 / p. 2868-2878 : ill

Three-body abrasive wear of reactive sintered WC-Co hardmetals with grain growth inhibitors

Juhani, Kristjan; Pirso, Jüri; Tarraste, Marek; Viljus, Mart; Suurkivi, Taavi Engineering materials & tribology XXII 2014 / p. 277-282 <https://doi.org/10.4028/www.scientific.net/KEM.604.277> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Conference proceedings at WOS](#) [Article at WOS](#)

Three-body abrasive wear of TiC-NiMo cermets

Pirso, Jüri; Viljus, Mart; Juhani, Kristjan; Kuningas, Marius Tribology international 2010 / 1/2, p. 340-346 : ill

Three-body abrasive wear of WC-Co composites manufactured by reactive sintering of nanocrystalline powders
[Electronic resource]

Juhani, Kristjan; Joost, Renee; Pirso, Jüri; Letunovitš, Sergei; Viljus, Mart; Tarraste, Marek 5th World Tribology Congress, WTC 2013 : [proceedings]. Vol. 3 2014 / p. 2084-2087. [CD-ROM]

TiC-base cermets as wear resistant materials

Kübarsepp, Jakob; Klaasen, Heinrich; Pirso, Jüri; Klaasen, Heinrich vt.ka Reshetnjak, Heinrich; Reshetnjak, Heinrich vt.ka Klaasen, Heinrich 9th Nordic Symposium on Tribology NORDTRIB 2000 : Porvoo, Finland, 11-14 June 2000. Vol. 1 2000 / p. 206-215 : ill

Titanium and chromium carbide based cermets

Pirso, Jüri 1996 http://www.ester.ee/record=b1070455*est

Tribological characterization of TiC-base cermets

Kübarsepp, Jakob; Pirso, Jüri; Klaasen, Heinrich Proceedings of 2000 Powder Metallurgy World Congress : November 12-16, 2000, Kyoto, Japan. Part 2 2000 / p. 1633-1636 : ill

Tribological properties of the Cr₃C₂-Ni metal-matrix composites

Hussainova, Irina; Pirso, Jüri EUROMAT 2001 : 7th European Conference on Advanced Materials and Processes : Rimini, Italy, 10-14 June, 2001 : conference abstracts 2001 / p. 122-123

Tribological properties of the Cr₃C₂-Ni metal-matrix composites [Electronic resource]

Hussainova, Irina; Pirso, Jüri Proceedings of 7th European Conference on Advanced Materials and Processes : EUROMAT 2001 : Italy 2001 / [CD-ROM]

Tribology of fine-grained cermets

Letunovitš, Sergei 2003 https://www.ester.ee/record=b1782627*est

Two body dry abrasive wear of TiC-NiMo cermets

Pirso, Jüri; Viljus, Mart; Juhani, Kristjan Tribology - materials, surfaces & interfaces 2007 / 2, p. 68-72

Two-body abrasive wear of WC-Co hardmetals in wet and dry environments

Pirso, Jüri; Juhani, Kristjan; Viljus, Mart; Letunovitš, Sergei Proceedings of the 8th International Conference of DAAAM Baltic Industrial Engineering, 19-21st April 2012, Tallinn, Estonia. 2 2012 / p. 711-716 : ill

Two-body dry abrasive wear of cermets

Pirso, Jüri; Viljus, Mart; Juhani, Kristjan; Letunovitš, Sergei Wear 2009 / 1/2, p. 21-29 : ill

Two-body dry abrasive wear of Cr₃C₂-Ni cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei Proceedings of the Estonian Academy of Sciences. Engineering 2006 / 4, p. 368-376 : ill

Two-body dry abrasive wear of Cr₃C₂-Ni cermets

Juhani, Kristjan; Pirso, Jüri; Viljus, Mart; Letunovitš, Sergei 15th International Baltic Conference "Engineering Materials & Tribology. Balttrib - 2006" : October 5-6, 2006, Tallinn, Estonia : abstracts 2006 / p. 58-59 : ill

Wear characteristics of TiC-base cermets

Kübarsepp, Jakob; Klaasen, Heinrich; Pirso, Jüri Materials Engineering & Balttrib 2001 : materials of the X-th International Baltic Conference : September 27-28, Jurmala, Latvia 2001 / p. 207-211 : ill

Wear of coatings and hard alloys for jig bushings

Kallas, Paul; Pirso, Jüri Tallinna Tehnikaülikooli Toimetised 1994 / lk. 43-51: ill

Wear-resistance of non-tungsten cemented carbides

Pirso, Jüri; Kallas, Paul Advances in hard materials production : proceedings of the 1996 European Conference on Advances in Hard Materials Production, Stockholm, Sweden, May 27-29, 1996 1996 / p. 333-338: ill

Абразивная эрозия двухфазных сплавов

Pirso, Jüri; Rauk, Marina Тезисы докладов пятой республиканской конференции "Эрозионностойкие порошковые материалы и покрытия" 1988 / с. 29-31 https://www.ester.ee/record=b1256812*est

Абразивная эрозия керметов

Kallas, Paul; Pirso, Jüri; Juriditski, B.J.; Mihhailov, B.G. Трение и износ в машинах. 14 1987 / с. 48-53

Безвольфрамовые порошковые твердые сплавы. Состояние и перспективы развития

Pirso, Jüri Безвольфрамовые порошковые твердые сплавы и карбидостали. Часть 1 : тезисы докладов IV республиканской научно-технической конференции 1985 / с. 8-10 https://www.ester.ee/record=b1253975*est

Влияние легирующих элементов на структуру и свойства сплавов TiC-Ni-Mo

Pirso, Jüri; Viljus, Mart Износостойкие порошковые материалы и покрытия : тезисы докладов второй конференции Балтийских республик 1991 / с. 8-9

Влияние некоторых технологических факторов на свойства дисперсионно-твердеющих сплавов Cu-Ti

Letunovits, Sergei; Pirso, Jüri Свойства и технология изготовления композиционных материалов 1986 / с. 22-30

Влияние режимов размола на дисперсность карбидохромовой смеси и ее активность при спекании

Pirso, Jüri; Valdma, Leo Тезисы докладов всесоюзной научной конференции "Технология, свойства и применение износостойких спеченных материалов", 26-28 ноября 1974 г. 1974 / с. 11-12

Влияние режимов размола на дисперсность смеси карбида хрома и никеля и ее активность при спекании

Pirso, Jüri; Valdma, Leo Спеченные износостойкие материалы 1977 / с. 8-12 : илл https://www.ester.ee/record=b2692826*est

Влияние скорости абразивных частиц на механизм изнашивания карбидохромовых спеченных сплавов

Pirso, Jüri; Kallas, Paul Свойства и технология изготовления износостойких материалов 1980 / с. 25-32 : илл https://www.ester.ee/record=b1276393*est <https://digikogu.taltech.ee/et/Item/be560987-a637-4f71-93da-1a9ee9705512>

Влияние содержания молибдена на свойства твердого сплава TiC-Ni-Mo

Pirso, Jüri Tallinna Tehnikaülikooli Toimetised 1990 / lk. 63-68: ill

Влияние состава и технологии изготовления на абразивную эрозию твердых сплавов TiC-WC с никкель-молибденовой связкой

Kallas, Paul; Pirso, Jüri; Agošavili, B.T.; Bujanovski, I.N. Свойства и технология изготовления композиционных материалов 1986 / с. 31-37

Влияние состава и технологических факторов на прочность связи между припеченными элементами

Vennikas, Peeter; Pirso, Jüri Износостойкие спеченные материалы и покрытия 1988 / с. 69-72

Влияние состава на некоторые свойства порошковых сплавов на медной основе

Letunovits, Sergei; Pirso, Jüri Износостойкие спеченные материалы и покрытия 1988 / с. 38-50

Влияние твердости абразива на механизм абразивной эрозии спеченных твердых сплавов

Pirso, Jüri; Kallas, Paul Трение и износ в машинах : сборник статей. 11 1981 / с. 91-102 : илл https://www.ester.ee/record=b2191149*est <https://digikogu.taltech.ee/et/Item/983b9430-cae0-4a0d-a83d-ddb843ffcae>

Влияние термической и химико-термической обработки на свойства порошковых твердых сплавов

Pirso, Jüri; Kūbarsepp, Jakob Металловедение и термическая обработка металлов : [ежемесячный научно-технический и производственный журнал] 1987 / с. 41-42

Влияние технологических факторов и состава на свойства карбидохромовых спеченных твердых сплавов

Pirso, Jüri; Valdma, Leo Порошковая металлургия : сборник статей. 2 1977 / с. 19-28 https://www.ester.ee/record=b2111366*est <https://digikogu.taltech.ee/et/Item/70a3ad25-126c-4b5f-b887-e5dc1aa558b3>

Влияние условий размола на измельчение порошка карбида титана, железа и их смесей

Pirso, Jüri; Arensbürger, Daniil Свойства и технология изготовления композиционных материалов 1985 / с. 27-39 : ил https://www.ester.ee/record=b1302663*est <https://digikogu.taltech.ee/et/Item/9734eeab-982c-412f-a97e-b8dee2325ff9>

Влияния фосфора на свойства карбидохромовых спеченных сплавов

Valdma, Leo; Pirso, Jüri Тезисы докладов I республиканской конференции по порошковой металлургии : эрозионностойкие спеченные материалы и их применение 1975 / с. 15-16 https://www.ester.ee/record=b1314322*est

Возникновение и развитие трещин в карбидохромовых спеченных сплавах при сжатии

Pirso, Jüri Свойства и технология изготовления износостойких материалов 1982 / с. 21-29 : илл
https://www.ester.ee/record=b1309562*est <https://digikogu.taltech.ee/et/Item/da5bb058-212f-443b-9de3-5673fbd01534>

Выбор сплава для кондукторных втулок

Pirso, Jüri; Kallas, Paul; Klautš, D.N.; Kuštševa, M.N. Трение и износ в машинах. 15 1989 / с. 53-62

Газоабразивная износостойкость и твердость порошковых твердых сплавов

Kallas, Paul; Pirso, Jüri Тезисы докладов пятой республиканской конференции "Эрозионностойкие порошковые материалы и покрытия" 1988 / с. 33-34 https://www.ester.ee/record=b1256812*est

Гидроабразивная износостойкость твердых сплавов

Valdma, Leo; Kallas, Juha; Pirso, Jüri; Kübarsepp, Jakob Трение, износ и смазочные материалы. Т. 2, Смазочное действие и смазочные материалы. Триботехническое материаловедение. Самоорганизующиеся процессы фрикционного контакта : труды международной научной конференции (Ташкент, 22-26 мая 1985 г.) : тезисы секционных докладов 1985 / с. 249-253
https://www.ester.ee/record=b2770097*est

Гидроабразивный износ спеченных карбидохромовых сплавов

Kallas, Paul; Pirso, Jüri; Valdma, Leo Трение и износ = Friction and Wear : международный научный журнал 1980 / с. 858-863 : ил., табл https://www.ester.ee/record=b1312784*est

Закономерности абразивного износа некоторых материалов мазутных форсунок

Valdma, Leo; Pirso, Jüri Износ, усталость и коррозия металлов : сборник статей. 5 1972 / с. 31-43 : илл
https://www.ester.ee/record=b2190525*est <https://digikogu.taltech.ee/et/Item/bf437fe1-81f3-4dff-97b2-b8d240135d43>

Закономерности измельчения твердосплавных смесей

Pirso, Jüri; Arensbürger, Daniil; Kübarsepp, Jakob [Порошковая металлургия] : тезисы докладов XV всесоюзной научно-технической конференции : (19-22 нояб. 1985 г.) 1985 / с. 140-141 https://www.ester.ee/record=b2336294*est

Изнашивание материалов с гетерогенной структурой в струе абразивных частиц

Pirso, Jüri; Rõuk, Marina; Kallas, Paul Трение и износ в машинах. 15 1989 / с. 63-70

Изнашивание твердого сплава в матрицах вырубного штампа

Pirso, Jüri; Vitsut, E.; Kallas, Paul; Tomingas, H. Электротехническая промышленность. Технология электротехнического производства : реферативный научно-технический сборник 1984 / с. 9-10

Износ порошковых материалов для кондукторных втулок

Kallas, Paul; Pirso, Jüri Износостойкие порошковые материалы и покрытия : тезисы докладов второй конференции Балтийских республик 1991 / с. 22

Износ порошковых токоподводящих мундштуков автоматической сварки под флюсом

Letunovič, Sergei; Arensbürger, Daniil; Pirso, Jüri Трение и износ в машинах. 14 1987 / с. 41-47

Износ твердосплавных кондукторных втулок

Pirso, Jüri; Kallas, Paul; Klautš, D.N.; Kuštševa, M.N. Tallinna Tehnikaülikooli Toimetised 1990 / lk. 3-11

Износостойкость карбидохромовых спеченных сплавов в абразивной струе

Valdma, Leo; Pirso, Jüri Тезисы докладов всесоюзной научной конференции "Технология, свойства и применение износостойких спеченных материалов", 26-28 ноября 1974 г. 1974 / с. 12-13

Износостойкость порошковых твердых сплавов

Pirso, Jüri; Kallas, Paul Технологични процеси и оборудоване за ефективно използване на металните материали 1989 / с. 161

Износостойкость спеченных сплавов на основе карбида хрома в абразивной струе

Valdma, Leo; Pirso, Jüri Спеченные износостойкие материалы 1977 / с. 64-70 https://www.ester.ee/record=b2692826*est

Исследование влияния технологических факторов и состава на свойства спеченных карбидохромовых твердых сплавов : Автореферат диссертации на соискание ученой степени кандидата технических наук

Pirso, Jüri 1976

Исследование возможностей применения центробежных форсунок, изготовленных методом порошковой

металлургии

Valdma, Leo; Mosberg, Rudolf; Pirso, Jüri Расширенные тезисы докладов VI республиканского семинара по порошковой металлургии 1970 / с. 48-51 https://www.ester.ee/record=b1372156*est

Исследование гидроабразивного износа центробежных форсунок

Valdma, Leo; Mosberg, Rudolf; Pirso, Jüri Республиканская научная конференция : абразивная эрозия : тезисы докладов 1970 / с. 11-12 https://www.ester.ee/record=b1372146*est

Исследование износостойкости твердых сплавов на основе TiC-C в условиях эрозионного изнашивания

Bujanovski, I.; Lindo, G.; Tšistjakova, V.; Agošašvili, B.; Pirso, Jüri; Kallas, Paul Износ в машинах и методы защиты от него : тезисы докладов Всесоюзной научной конференции, посвященной 1000-летию г. Брянска (Брянск, 1985 г.) 1985 / с. 180

Исследование технологии и свойств порошковых медных сплавов, подвергнутых термической обработке

Letunovičs, Sergei; Pirso, Jüri Тезисы докладов пятой республиканской конференции "Эрозионностойкие порошковые материалы и покрытия" 1988 / с. 40-41 https://www.ester.ee/record=b1256812*est

К прогнозированию газоабразивной износостойкости порошковых твердых сплавов

Kallas, Paul; Pirso, Jüri Трение и износ = Friction and Wear : международный научный журнал 1989 / с. 649-655 : ил https://www.ester.ee/record=b1312784*est

Карбидохромовые покрытия на спеченных сталях

Kulu, Priit; Pirso, Jüri; Arensbürger, Daniil Всесоюзная научно-техническая конференция "Проблемы порошковой металлургии при производстве деталей в машиностроении" (г. Ташкент, ноябрь 1979 г.) : Тезисы докладов 1979 / с. 107-108

Карбидохромовые спеченные сплавы

Pirso, Jüri Пути экономии вольфрамсодержащих инструментальных материалов : сборник тезисов докладов научно-технического семинара 1980 / с. 32-33 : табл https://www.ester.ee/record=b1275894*est

Кинетика абразивного изнашивания поверхностей спеченных твердых сплавов

Pirso, Jüri; Kallas, Paul Всесоюзная конференция по текстурам и рекристаллизации в металлах и сплавах (11-13 июня) : тезисы докладов 1980 / с. 282

Кинетика и механизм измельчения карбидохромоникелевой смеси при размоле

Arensbürger, Daniil; Pirso, Jüri Свойства и технология изготовления износостойких материалов 1982 / с. 37-46 : илл https://www.ester.ee/record=b1309562*est <https://digikogu.taltech.ee/et/Item/da5bb058-212f-443b-9de3-5673fbd01534>

Коррозионностойкий антифрикционный материал на основе карбида хрома и никеля

Pirso, Jüri; Letunovičs, Sergei Свойства и технология изготовления износостойких материалов 1984 / с. 53-62 : ил https://www.ester.ee/record=b1356624*est <https://digikogu.taltech.ee/et/Item/ea022321-1583-4ebc-b2cc-3fb5baef87a9>

Легирование карбидохромового спеченного сплава

Arop, A.; Valdma, Leo; Pirso, Jüri XX студенческая научно-техническая конференция вузов Прибалтийских республик, Белорусской ССР и Молдавской ССР : тезисы докладов. Часть 1 1974 / с. 181 https://www.ester.ee/record=b1306141*est

Механизм избирательного изнашивания порошковых твердых сплавов

Pirso, Jüri; Kallas, Paul Трение и износ в машинах. 13 1985 / с. 27-36 : ил https://www.ester.ee/record=b2191144*est <https://www.etera.ee/zoom/121375/view?>

Механизм изнашивания боковой поверхности матриц вырубных твердосплавных штампов

Vitsut, E.; Pirso, Jüri; Kallas, Paul Пути повышения эффективности использования инструментальных ресурсов : сборник тезисов докладов научно-технического семинара 1983 / с. 42-49 : ил https://www.ester.ee/record=b1291705*est

Механизм изнашивания порошковых твердых сплавов при малой скорости абразивных частиц

Kallas, Paul; Pirso, Jüri Трение и износ = Friction and Wear : международный научный журнал 1986 / с. 484-492 : ил https://www.ester.ee/record=b1312784*est

Наплавленные карбидохромовые покрытия

Arensbürger, Daniil; Pirso, Jüri Защита металлов 1982 / с. 659-660

Некоторые зависимости между технологическими факторами свойствами карбидо-хромовых твердых сплавов

Valdma, Leo; Pirso, Jüri Eigenschaften, Herstellung, Einsatz metallischer Sinter- und Verbundwerkstoffe : Abhandlungen der V. Internationalen Pulvermetallurgischen Tagung, Dresden, 23. bis 25. Oktober 1973 1973 / S. 29-1-29-14

Некоторые свойства износостойких эмалевых покрытий, содержащих тугоплавкие карбиды

Arensbürger, Daniil; Pirso, Jüri Свойства и технология изготовления износостойких материалов 1980 / с. 3-9 : илл https://www.ester.ee/record=b1276393*est <https://digikogu.taltech.ee/et/Item/be560987-a637-4f71-93da-1a9ee9705512>

О влиянии режимов спекания на износостойкость твердого сплава BK15M в абразивной струе

Pirso, Jüri; Mosberg, Rudolf; Valdma, Leo Расширенные тезисы докладов VI республиканского семинара по порошковой металлургии 1970 / с. 52-56 : табл https://www.ester.ee/record=b1372156*est

О возможности моделирования изнашивания материалов мазутных форсунок

Valdma, Leo; Pirso, Jüri Износ, усталость и коррозия металлов : сборник статей. 5 1972 / с. 17-30 : илл https://www.ester.ee/record=b2190525*est <https://digikogu.taltech.ee/et/Item/bf437fe1-81f3-4dff-97b2-b8d240135d43>

О геометрии входных каналов центробежного распылителя

Valdma, Leo; Tümanok, Aleksei; Pirso, Jüri; Kudrjartsev, Vladimir; Nanits, Mats-Maidu Теплоэнергетика : сборник статей. 14 1973 / с. 23-32 : илл https://www.ester.ee/record=b2190625*est <https://digikogu.taltech.ee/et/Item/dcf3aba2-b1fd-412f-9c9b-d5aa41391933>

О механизме разрушения карбидохромовых спеченных твердых сплавов

Pirso, Jüri Трение и износ в машинах 1980 / с. 63-70 : илл https://www.ester.ee/record=b2191013*est <https://digikogu.taltech.ee/et/Item/ce30370b-afd1-4c7d-a563-4e4f7a1b178e>

О механизме разрушения карбидохромовых спеченных твердых сплавов

Pirso, Jüri Направления развития инструментального производства в X пятилетке : сборник тезисов докладов научно-технического семинара 1978 / с. 173 https://www.ester.ee/record=b1308562*est

Оптимизация состава порошкового электроконтактного материала

Pirso, Jüri; Letunovič, Sergei Свойства и технология изготовления композиционных материалов 1985 / с. 41-48 : ил https://www.ester.ee/record=b1302663*est <https://digikogu.taltech.ee/et/Item/9734eeab-982c-412f-a97e-b8dee2325ff9>

Опыт применения метода порошковой металлургии для изготовления распыливающих элементов форсунок жидкого топлива

Valdma, Leo; Pirso, Jüri; Mosberg, Rudolf; Kudrjartsev, Vladimir Тезисы докладов II Всесоюзного семинара по металлокерамическим конструкционным материалам и изделиям 1972 / с. 36-38

Особенности механизма гидроабразивного изнашивания карбидохромовых спеченных сплавов

Kallas, Paul; Pirso, Jüri; Valdma, Leo Трение и износ в машинах 1978 / с. 67-77 : илл https://www.ester.ee/record=b2190999*est <https://www.etera.ee/zoom/121378/view?page=1&p=separate&search=%D0%A2%D1%80%D0%B5%D0%BD%D0%B8%D0%B5%20%D0%B8%20%D0%B8%D0%B7%D0%BD%D0%BE%D1%81%20%D0%B2%20%D0%BC%D0%B0%D1%88%D0%B8%D0%BD%D0%B0%D1%85&tool=search&view=0,0,1964,3047>

Перспективные материалы для деталей форсунок жидкого топлива

Valdma, Leo; Mosberg, Rudolf; Pirso, Jüri; Kabral, Hillar-Endel Тезисы докладов республиканского семинара по порошковой металлургии 1969 / с. 27-29 https://www.ester.ee/record=b1339858*est

Показатели оценки износа твердосплавного разделительного штампа

Visut, E.; **Pirso, Jüri; Kleis, Ilmar** Тезисы докладов пятой республиканской конференции "Эрозионностойкие порошковые материалы и покрытия" 1988 / с.36-37 https://www.ester.ee/record=b1256812*est

Порошковая металлургия

Mosberg, Rudolf; Arensburger, Daniil; Letunovič, Sergei; Pirso, Jüri; Kallas, Paul; Agošašvili, B.T.; Bujanovski, I.N.; Ivaštšenko, L.K.; Kulu, Priit; Mühlman, J.; Halling, Jaanus; Valdma, Leo; Kübarsepp, Jakob; Annuka, Harri; Laansoo, Andres; Käerdi, Helmo; Randmer, Uudus; Liimann, Väino; Siimar, Rein; Ritso, Aadu 1986 https://www.ester.ee/record=b1354812*est

Порошковая металлургия

Mosberg, Rudolf; Valdma, Leo; Annuka, Harri; Kübarsepp, Jakob; Kallas, Paul; Kudrjartsev, Vladimir; Tani, P.; Arensburger, Daniil; Letunovič, Sergei; Pirso, Jüri; Kulu, Priit; Rõuk, Arno; Rõuk, Marina; Halling, Jaanus; Vennikas, Peeter; Laansoo, Andres; Liimann, Väino; Ritso, Aadu; Tšainikov, N.A.; Karatšunski, A.D.; Siimar, Rein; Grigorjev, A.V. 1988 https://www.ester.ee/record=b1256860*est

Применение математических методов при изучении влияния технологических факторов и состава на свойства твердого сплава на основе карбидов хрома

Pirso, Jüri; Valdma, Leo Тезисы докладов II Всесоюзного семинара по металлокерамическим конструкционным материалам и изделиям 1972 / с. 39-40

Принципы управления комплексом гидроабразивная износостойкость-прочность твердых сплавов

Valdma, Leo; Pirso, Jüri; Kallas, Paul; Kübarsepp, Jakob Новые технологические процессы в порошковой металлургии 1986 / с. 47-52 https://www.ester.ee/record=b2047985*est

Принципы управления комплексом гидроабразивная износостойкость-прочность твердых сплавов

Valdma, Leo; Pirso, Jüri; Kallas, Paul; Kübarsepp, Jakob Порошковая металлургия : тезисы докладов XV всесоюзной

научно-технической конференции : (19-22 нояб. 1985 г.) 1985 / с. 403-404 https://www.ester.ee/record=b2336294*est

Разработка и исследование порошковых сплавов для распылителей жидкого топлива котлоагрегатов
Arutjunova, I.; Šestjorkin, N.; **Pirso, Jüri; Kübarsepp, Jakob** Технология сварки при изготовлении и ремонте элементов оборудования для тепловых электростанций 1988 / с. 118-122

Разработка эрозионностойких конструкционных элементов из безкобальтовых спеченных сплавов
Valdma, Leo; Pirso, Jüri; Kudrjavev, Vladimir; Kozjakov, Vladimir Тезисы докладов III Всесоюзного семинара по конструкционным спеченым материалам и изделиям (8-10 апр. 1975 г.) 1975 / с. 49-50

Термодиффузионная обработка твердых сплавов на основе карбида хрома
Kudrjavev, Vladimir; Pirso, Jüri Порошковая металлургия = Powder metallurgy : ежемесячный научно-технический журнал 1982 / с. 69-73 https://www.ester.ee/record=b1645489*est

Термостойкость карбидохромовых спеченных сплавов
Pirso, Jüri; Valdma, Leo; Masing, Juhan Износ, усталость и коррозия металлов : сборник статей. 7 1975 / с. 39-45 : илл https://www.ester.ee/record=b2190702*est <https://digikogu.taltech.ee/et/Item/7b7b4d74-55e0-43cf-b22c-bd484ceb163f>

Технология и свойства сплавов TiC-сталь, изготовленных из карбида титана, полученного СВС-методом
Kübarsepp, Jakob; Pirso, Jüri; Arensbürger, Daniil Свойства и технология изготовления износостойких материалов 1984 / с. 3-8 : ил https://www.ester.ee/record=b1356624*est <https://digikogu.taltech.ee/et/Item/ea022321-1583-4ebc-b2cc-3fb5baef87a9>

Трение и износ в машинах
Tadolder, Jüri; Kleis, Ilmar; Remi, Toomas; Kangur, Hillar; Ellermaa, Riho-Rene; Pallase, Ado; Kulu, Priit; Halling, Jaanus; Pirso, Jüri; Kallas, Paul; Klautš, D.N.; Kuštševa, M.N.; Rõuk, Marina; Kübarsepp, Jakob; Annuka, Harri; Valdma, Leo; Ajaots, Mairo; Põdra, Priit; Tamre, Mart 1989 https://www.ester.ee/record=b2191662*est

Трение и износ в машинах
Tadolder, Jüri; Pallase, Ado; Pappel, Toivo; Järvpõld, Lembit; Vainu, J.; Kulu, Priit; Halling, Jaanus; Tammeraid, Ivar; Letunovitš, Sergei; Arensbürger, Daniil; Pirso, Jüri; Kallas, Paul; Juriditski, B.J.; Mihhailov, B.G.; Annuka, Harri; Kübarsepp, Jakob; Valdma, Leo; Kallasvee, Andres; Saar, Bernhard; Möldre, Heino; Tamre, Mart; Ajaots, Mairo; Lees, Rein 1987 https://www.ester.ee/record=b2191170*est

Характер изнашивания рабочих органов турбоизмельчителей
Kleis, Ilmar; Valdma, Leo; Sokolov, A. F.; Pirso, Jüri; Pappel, Toivo Химическое и нефтегазовое машиностроение : научно-технический и производственный журнал 1977 / с. 33-34 : илл https://www.ester.ee/record=b2158380*est

Характер износа центробежных мазутных форсунок
Valdma, Leo; Mosberg, Rudolf; Pirso, Jüri; Kudrjavev, Vladimir; Kozjakov, Vladimir Научно-координационное совещание по абразивному изнашиванию. Тезисы докладов и сообщений. 17-19 января 1972 г 1971 / с. 79-82

Характер эрозии центробежных распылителей мазутных форсунок
Valdma, Leo; Pakkas, Loit; Arumeel, Edgar; Pirso, Jüri; Kozjakov, Vladimir Энергомашиностроение : ежемесячный научно-технический и производственный журнал 1974 / с. 41-43 https://www.ester.ee/record=b2253960*est

Химико-термическая обработка спеченных твердых сплавов
Kotkas, Kalev; Pirso, Jüri XXV студенческая научно-техническая конференция вузов Прибалтийских республик, Белорусской ССР и Молдавской ССР, 21-23 апреля 1981 года : тезисы докладов. Том 2, Автоматика. Энергетика. Механика. Химия 1981 / с. 133 https://www.ester.ee/record=b1322629*est