

**Prof. Börje Johansson**

**(Personal ID: 420612-7310)**

**A. Professional preparation**

1. Fil. kand. in mathematics, theoretical physics, and astronomy, Uppsala university, 1963.
2. Licentiate of Philosophy at the University of Stockholm in theoretical physics and mechanics 1965.
4. Doctor of Philosophy at the University of Stockholm in theoretical physics and mechanics 1969.
6. Docent, 1969.
7. Employed at FOA (Swedish National Defense Institute), Stockholm, 1964-1979.

**B. Appointments**

1. Employed 1977 at the Centre d'Études Nucléaires de Grenoble.
2. 1977-1978 t.f. professor in theoretical physics at Linköping University, Linköping.
3. 1979, visiting scientist at Max-Planck Institute, Stuttgart.
4. 1979-1980, visiting scientist and visiting lecturer at ETH, Hönggerberg, Zurich.
5. 1982 visiting scientist at Xerox, Palo Alto, California.
6. 1983, -85, -86.-88 visiting scientist at Los Alamos National Laboratory, New Mexico.
7. 1985, distinguished visiting scientist, Oak Ridge, Tennessee.
8. 1980-1987 professor in theoretical physics, University of Aarhus, Aarhus, Denmark.
9. 1985, personal chair in condensed matter theory at NFR (Swedish Research Council).
10. 1994, professor in condensed matter theory, University of Uppsala.
11. 2000, professor at KTH, Stockholm.

**C. Commissions of trust**

1. Member of the evaluation committee at many dissertations for the degree of Ph.D.
2. Faculty opponent at many occasions at dissertations for the degree of Ph.D. in Sweden. Also in Denmark, France and Finland.
3. Expert for the docent- "degree" at many occasions.
4. Expert evaluations for four different professorships in USA.
5. Expert for the National Research Council's (USA) evaluation: "Future Directions in Transplutonium Elements Research", Washington, 1983.
6. Consultant at Los Alamos National Laboratory since 1983-.
7. Member of the evaluation group for "Århus Heavy Ion Storage Ring as a Danish Synchrotron Light Facility (ASTRID)".
8. Member of the NFR's evaluation group for "Swedish Utilization of Future Synchrotron Light Facilities", 1985.
9. Member of the NFR's evaluation group for research applications in condensed matter physics, 1985 and 1986.
10. Member of the European evaluation group for the establishment of a "Hot Beam Line at a Synchrotron Facility", 1985-87.
11. Expert evaluation for a professorship at the Tata Institute, Bombay.
12. Swedish member of the Superconductivity Steering Group, EEC, Brussels, 1987-88.
13. Evaluation for The Royal Swedish Academy of Sciences (KVA), 1987.
14. Member of the NFR's evaluation group for research application in "High Temperature Superconductivity", 1987.
15. Expert evaluation for a lecturer position in theoretical physics, Chalmers, Gothenburg, 1987.
16. NFR's evaluation group for applications in condensed matter physics, 1988-.

17. Expert evaluation for a professorship in theoretical physics, Linköping, 1990.
18. Member of the NFR's evalutation group for research applications in mathematics, 1990-1995.
19. Expert evaluation for a professorship in physics, Århus, Denmark, 1990.
20. Member of the evaluation group for "A National Materials Science Program" (STU) and the Swedish Natural Science Research Council (NFR)), 1988-1990.
21. Member of the Steering Group for High Temperature Superconductivity, Swedish National Board for Technical Development (STU), 1988-1992.
22. Expert for the Solid State Physics and Chemistry Panel, Transactinium Institute , Berkeley, California, 1990.
23. Expert evaluation for a lector position in physics, Bristol, 1992.
24. Member of the Board of (in later times):
  - a. Solid State Physics Section, Danish Physical Society, 1982-1985.
  - b. Editorial Advisory Board for the Journal of Less Common Metals/Journal of Alloys and Compounds, 1982-.
  - c. Institute of Physics, University of Århus, 1984-1985.
  - d. Educational Board, Faculty of Natural Sciences, University of Århus, 1983-1985.
  - e. MAX Synchrotron Radiation Laboratory, Lund, 1985-1988.
  - f. USAM, Uppsala, 1985-.
  - g. Tjänsteförslagsnämnden, Faculty of Natural Sciences, University of Uppsala, 1988-1992.
  - h. Section for Natural Sciences, University of Uppsala, 1988-1992.
  - i. PuF (Program Section for Physics), Swedish Natural Science Research Council (NFR), 1989-.
  - j. PuE (Program Section for Energy), Swedish Natural Science Research Council (NFR), 1989-.
  - k. Committee for Materials Science (KOMA), Swedish Natural Science Research Council (NFR), 1989-1992.
  - l. Steering Group for the MAX Synchrotron Radiation Laboratory, 1990-.
  - m. Physics Department, University of Uppsala, 1989-1992.
  - n. Condensed Matter Physics Division, Swedish Physical Society, 1989-.
  - o. Advisory Technical Awareness Council, ASM, USA, 1990-1994.
  - p. Committee for Natural Science Research, Faculty of Natural Sciences, University of Uppsala, 1990-1992.
  - q. Chairman for PuE (Program Section for Energy), Swedish Natural Science Research Council (NFR), 1992-1996.
  - r. Steering Group for the National Supercomputer Centre (NSC), Linköping, 1993-1996.
  - s. Chairman for the Steering Group for a Special NFR Program "Solid State Physics and Chemistry Year 2000".
  - t. Full member of Swedish Natural Science Research Council (NFR), 1995-2000.
25. Member of The Royal Swedish Academy of Sciences (KVA),1997-.
26. Selected science policy missions in recent years:
  - a. Chairman of The Swedish Nanonetwork, 2000-
  - b. Expert member for ESRF, Grenoble evaluations of beam-time applications (twice a year). 1996-1998, 2000 -.
  - c. Evaluations of German science applications.
  - d. Evaluations of Italian science applications.
  - e. Evaluations of science applications from USA.
  - f. Evaluation of Actinide research in National Laboratories in USA.
  - g. Chairman for VR's review committee for condensed matter physics 2000-2003.
  - h. Chairman for SNAC (review committee for High Performance Computing Applications). 2000-

- i. EU evaluation committee for Large Scale Facilities.
- j. Member of FPR (Nordiska Forskningspolitiska Rådet, The Nordic Research Policy Council) 2000-
- k. Member of the board of IMEGO, Institute of Microelectronics in Gothenburg, 2003-
- l. Director of KTH/KI Nano- and Microtechnology Centre, 2002-
- m. Dean of School of Physics and Optoelectronic Technology (SPOT) at Dalian University of Technology (DLUT), China, 2006 - (1w/y)

## **E. Entrepreneurial achievements**

- 1. Took part in the starting of a company: Nilsson Materials AB.
- 2. Started a research group in Uppsala from level zero.
- 3. Started a research group at KTH, Stockholm from level zero.

## **F. Graduated students**

- 1. Stockholm (University):
  - 1) Anders Rosengren, 1977
- 2. Aarhus:
  - 2) Per Hedegård, 1983
  - 3) Palle Munck, 1984
- 3. Uppsala:
  - 4) Olle Eriksson, 1989
  - 5) Lars Nordström, 1991
  - 6) Yongming Lou, 1991
  - 7) Lukas Severin, 1993
  - 8) Tom Gasche, 1994
  - 9) Per Söderlind, 1994
  - 10) Magnus Aldén, 1994
  - 11) Joakim Trygg, 1995
  - 12) Susanne Mirbt, 1995
  - 13) Olof Hjortstam, 1997
  - 14) Anna Delin, 1998
  - 15) Lars Fast, 1998
  - 16) Anders Niklasson, 1998
  - 17) Peter James 1999
  - 18) Urban Lundin, 2000
  - 19) Håkan Hugosson, 2001
  - 20) Per Andersson, 2001
  - 21) Elisabeth Sjöstedt 2002
  - 22) Leonid Pourovskii, 2003
  - 23) Sa Li 2004
  - 24) Jorge Osario Guillen 2004
  - 25) Massimiliano Colarieti-Tosti: 2004
  - 26) Daniel Åberg: 2004
  - 27) Velimir Meded: 2005
  - 28) Alexei Grechnev 2005
  - 29) Weine Olofsson 2005
  - 30) Jailton Almeida 2006
  - 31) Lunmei Huang 2007

4. Stockholm (KTH):

- 32) Yi Wang 2004
- 33) Adrian Taga 2004
- 34) David Andersson 2007

(All of the PhDs who wanted to continue their studies (almost 90%) have got post-doc positions abroad.). 4 have become professors. 8 have got research positions abroad. In the coming 2-3 years about four students will become doctors annually.)

**G. Other relevant qualifications**

- 1958-1961 Free-place scholar at Sigtuna Humanistiska Läroverk, Sigtuna, 1958-1961.
- 1961 The highest reward of the Swedish Association of Technology for the best written test in mathematics and physics in the higher school certificate in Sweden 1961.
- 1964-1966 Scholarship at NORDITA, Copenhagen.
- 1985 Distinguished visiting scientist, Oak Ridge, Tennessee.
- 1999 Elected to present the Spedding Lecture at Ames National Laboratory.
- 2000 **Celsius-medaljen.**  
Kungliga vetenskapssocietetens förnämsta utmärkelse.  
The Highest Award of The Royal Society of Sciences
- 2001 **Excellent researcher.** An award from VR (The Swedish Research Council )
- 2004 **Honorary doctor** at Moscow State University of Technology (2004).
- 2004 **Honorary doctor** at Vienna University of Technology (2004).
- 2004 **Björken's Prize.** The most prestigious prize of Uppsala University in science on a national basis.
- 2004 **Honorary Member** of V-Dala Nation.
- 2004 Member of the Nobel Prize Committee for Physics.
- 2006 **Honorary Professor** at Huazhong Normal University
- 2006 **Orden** at Moscow State University of Technology. "For outstanding achievements and extended personal contributions to Materials Science."
- 2006 **Honorary Professor** at Dalian University of Technology

About 200 invited talks at international conferences.

**Recent invited talks at major international conferences**

- Nov. 2005**      **Invited speaker at the MRS Meeting, Boston, USA**
- March 13-17, 2006**    **Invited speaker at the American Physical Society (APS) annual meeting, Baltimore, USA**
- July 9-14, 2006**      **Invited speaker at the international conference on Plutonium Future, Asilomar. USA**
- July 1-7, 2007**      **17th International Vacuum Congress (IVC-17), 13th International Conference on Surface Science (ICSS-13), International Conference on Nanoscience and Technology 2007 (ICN+T 2007), 6th Nordic Conference on Surface Science (NCSS-6), 22nd Nordic Semiconductor Meeting (NSM-22) and 4th Swedish Vacuum and Materials Science Meeting (SVM-4), Stockholm (2007)**

# PUBLICATIONS 1999-2007

## Börje Johansson

My H-number is above 50.

## HIGH PROFILE JOURNAL PUBLICATIONS

### Nature –Phys. Rev. Lett.-Publications by Börje Johansson 1999-

- P1 M. van Schilfgaarde, I. A. Abrikosov, and B. Johansson;  
"Origin of the Invar effect in iron-nickel alloys."  
Nature **400**, 46 (1999).
- P1b *Paper reqognition:*  
"A Century of Zero Expansion."  
Nature **400**, 18 (1999).  
(Editorial comment on the paper above P1).
- P1c Cover Picture from paper P1 to Nature **400**, 1<sup>st</sup> of July issue.
- P2 A.M.N. Niklasson, L. Nordström, and B. Johansson:  
"Spin density waves in thin chromium films".  
Phys.Rev.Lett. **82**, 4544 (1999).
- P3 U. Häussermann, S. I. Simak, R. Ahuja, B. Johansson, S. Lidin;  
"The Origin of the Distorted Close-Packed Elemental Structure of Indium."  
Angewandte Chemie Int. Engl. **38**, 2017 (1999).
- P4 W. M. Temmerman, Z. Szotek, A. Svane, P. Strange, H.Winter, A.Delin, B.Johansson,  
O.Eriksson, L.Fast, J.M.Wills  
"Electronic Configuration of Yb Compounds"  
Phys. Rev. Lett. **83**, 3900 (1999)
- P5 A. Belonoshko, R. Ahuja, B. Johansson:  
"Quasi *ab initio* molecular dynamic study of hcp iron melting."  
Phys. Rev. Lett. **84**, 3638 (2000)
- P6 S. I. Simak, U.Haussermann, R. Ahuja, S. Lidin and B. Johansson :  
"Gallium and Indium under High Pressure."  
Phys. Rev. Lett. **85**, 142 (2000)
- P7 P. Mohn, P. Weinberger, B. Ujfalussy, O. Eriksson, G. Gutierrez,  
R. Ahuja, B. Johansson:  
"Mystery of the alkali metals: Giant moments of Fe and Co on and in Cs films."

- Phys. Rev. Lett. **85**, 1583 (2000)
- P8 B. Holm, R. Ahuja, A. Belonoshko and B.Johansson:  
 "Theoretical Investigation of High Pressure Phases of Carbon Dioxide."  
 Phys. Rev. Lett. **85**, 1258 (2000)
- P9 Adrian Taga, Lars Nordström, Peter James, Börje Johansson and Olle Eriksson:  
 "On the possibility of non-collinear magnetic states in new generation magnetic sensors."  
 Nature **406**, 280 (2000)
- P10 Börje Johansson:  
 "The many states of americium."  
 Physics World, December, p.26 (2000). (Physics in action, *invited article*).
- P11 U. Häussermann, S. I. Simak, R. Ahuja, and B. Johansson;  
 "A Unified Bonding Picture for the Metallic Triel Elements".  
 Angew. Chem. Intl. Engl **39**, 1246 (2000).
- P12 L.S. Dubrovinsky, N.A. Dubrovinskaia, V. Swamy, J.Muscat, N.M. Harrison, R.Ahuja,  
 B.Holm, and B.Johansson:  
 "The Hardest Known Oxide."  
 Nature **410**, 653 (2001).
- P13 L. Vitos, I.A. Abrikosov, and B.Johansson,:  
 "Anisotropic lattice distortions in random alloys from first-principles theory."  
 Phys, Rev. Lett. **87**, 156401 (2001).
- P13b *Paper recognition:*  
 Cover Picture from paper P13 to Physical Review Letters **87**, 8<sup>th</sup> of October issue.
- P14 A. Belonoshko, R. Ahuja, and B. Johansson:  
 "Molecular dynamics study of melting and fcc-bcc transitions in Xe."  
 Phys. Rev. Lett. **87**, 165505 (2001).
- P15 H.W. Hugosson, U. Jansson, B. Johansson and O. Eriksson:  
 "Restricting Dislocation Motion in Transition Metal Carbides  
 by Phase Stability Tuning".  
 Science **293**, 2434 (2001).
- P15b An Editorial Highlight of paper P15 is published in  
*Chemical & Engineering News* (September, 2001)
- P16 I. A. Abrikosov, W. Olovsson, and B.Johansson:  
 "Valence band hybridization and core level shifts in random AgPd alloys",  
 Phys. Rev. Lett. **87**, 176403 (2001).
- P17 L. Dubrovinsky, N. Dubrovinskaia, I. A. Abrikosov, M. Vennström, F. Westman, S. Carlson,  
 M. van Schilfgaarde, and B. Johansson:  
 "Pressure induced Invar effect in Fe-Ni alloys",

Phys. Rev. Lett. **86**, 4851 (2001)

- P18 L. Vitos,P. A. Korzhavyi, B. Johansson:  
"Elastic property maps of austenitic stainless steels."  
Phys. Rev. Lett. **88**, 155501 (2002).

*Paper recognition:*

- P18b Cover Picture from paper P18 to Physical Review Letters **88**, 15<sup>th</sup> of April issue, 2002.
- P18c An Editorial Highlight of paper P18 is published in *Materials Today* (June, 2002)

- P19 N.V. Skorodumova, S.I. Simak, B.I. Lundqvist, I.A. Abrikosov, and B.Johansson:  
"Quantum origin of the oxygen storage capability of ceria"  
Physical Review Letters **89**, 166601 (2002).

*Paper recognition:*

- P19b A digest of paper P19 is published in *Physics News Update* (The AIP Bulletin of Physics News, October 2002).
- P19c An Editorial Highlight of paper P19 is published in *Nature* (October, 2002).
- P19d An Editorial Highlight of paper P19 is published in *Physics Today* (December, 2002).

- P20 L. Vitos, P. A. Korzhavyi, and B. Johansson "Modeling of alloy steels"  
Review Features, Materials Today, October, 14-23 (2002).

- P21 P. A. Korzhavyi,, L. V. Pourovskii,, H. W. Hugosson, A. V. Ruban and  
B. Johansson: "Ab initio study of phase equilibria in TiC<sub>X</sub>".  
Phys. Rev. Lett. **88**, 15505 (2002).

- P22 J.K. Dewhurst, R.Ahuja, S. Li and B.Johansson  
Lattice Dynamics of Solid Xenon Under Pressure  
*Phys. Rev. Lett.* **88**, 075504 (2002).

- P23 Levente Vitos, Pavel A. Korzhavyi, and Börje Johansson,  
"Stainless steel optimization from quantum mechanical calculations",  
Nature Materials **2**, 25 (2003).

- P24 L.V. Pourovskii, A.V. Ruban , B. Johansson, and I. A. Abrikosov,  
"Antisite-defect-induced surface segregation in ordered NiPt alloy",  
Phys. Rev. Lett. **90**, 026105 (2003).

- P25 L. Dubrovinsky, N. Dubrovinskaia, F. Langenhorst, D. Dobson, D. Rubie, C.Geshmann,  
I. A. Abrikosov, B. Johansson, V. I. Baykov, L. Vitos, T. LeBihan, W. A. Crichton,  
V.Dmitriev, and H.-P. Weber:

"Iron-silica interaction at extreme conditions and the electrically conducting layer at the base of Earth's mantle".

Nature **421**, 58 (2003).

- P26 A.B. Belonoshko, R. Ahuja, and B. Johansson,  
"Body-centered cubic iron in the Earth's inner core",  
Nature **424**, 1034 (2003).
- P27 U. Häussermann, S.I. Simak, R. Ahuja, and B. Johansson:  
"Metal-nonmetal transition in the boron group elements".  
Phys. Rev. Lett. **90**, 065701 (2003).
- P28 P. Sharma, A. Gupta, K.V. Rao, F.J Owens, R. Sharma, R. Ahuja, J.M.O. Guillen,  
B.Johansson and G.A. Gehring:  
"Ferromagnetism above room temperature in bulk and transparent thin films of Mn-doped  
ZnO".  
Nature Materials **2**, 673 (2003).

*Paper recognition:*

An Editorial Highlight and Picture regarding paper P28 is published in  
Nature Materials 2, Oct. 2003.

*This paper is the most cited publication in Nature Materials*

- P29 P.A. Korzhavyi, L. Vitos, D.A. Andersson, and B. Johansson:  
"Oxidation of Plutonium Dioxide".  
Nature Materials **3**, 225 (2004).

*Paper recognition:*

An Editorial Highlight regarding paper P29 is published in  
Nature Materials, April 2004.

- P30 A. B. Belonoshko, S. I. Simak, A. E. Kochetov, B. Johansson, L. Burakovskiy, and D. L. Preston,  
"High-Pressure Melting of Molybdenum."  
Phys. Rev. Lett. **92**, 195701 (2004).

- P31 A.S. Mikhaylukhin, U. Häussermann, B. Johansson, S.I. Simak:  
"Fluctuating Lattice Constants of Indium Under High Pressure".  
Phys. Rev. Lett. **92**, 195501 (2004)

- P32 W. Olovsson, W. I.A. Abrikosov, B. Johansson, B. A. Newton, R.J. Cole, P. Weightman ;  
"Auger Energy Shifts in fcc AgPd Random Alloys from  
Complete Screening Picture and Experiment".  
Phys. Rev. Lett. **92**, 226406 (2004).

- P33 M. Colarieti-Tosti, M. I. Katsnelson, M. Mattesini, S. I. Simak, R. Ahuja, B. Johansson, C. Dallera, and O. Eriksson,  
*First-Principles Theory of Intermediate-Valence f-electron Systems*  
Phys. Rev. Lett. **93**, 096403 (2004).
- P34 L. Vitos, P.A. Korzhavyi, and B. Johansson:  
*Austenitic stainless steels from quantum mechanical calculations,*  
Advanced Engineering Materials **6**, 228 (2004).
- P35 A. B. Belonoshko, N. V. Skorodumova, A. Rosengren, R. Ahuja, B. Johansson, L. Burakovskiy, and D. L. Preston:  
"High Pressure Melting of MgSiO<sub>3</sub>"  
Phys. Rev. Lett. **94**, 195701 ( 2005)
- P36 S. Heathman, R.G. Haire, T. Le Bihan, A. Lindbaum, M. Idiri, P. Normile, S. Li, R. Ahuja, B. Johansson and G.H. Lander:  
"A High-Pressure Structure in Curium Linked to Magnetism"  
Science **309**, 110 (2005).
- Paper Recognitions:*
- a. EURATOM, JRC Excellence Award 2005, category Best Peer-Reviewed Scientific Paper
  - b. ESRF Highlight 2005
- P37 N. Dubrovinskaia, L. Dubrovinsky, I. Kantor, W.A. Crichton, V. Dmitriev, V. Prakapenka, G. Shen, L. Vitos, R. Ahuja, B. Johansson, and I.A. Abrikosov:  
"Beating the miscibility barrier between iron group elements and magnesium by high-pressure alloying"  
Phys. Rev. Lett. **95**, 245502 (2005).
- Paper Recognitions:*
- a. Cover page of the issue Phys. Rev. Lett. 95, Number 24, 9 December 2005.
  - b. Presentation by the Swedish Radio P4 Östergötland, 2005-12-12, 06.39.
  - c. Presentation by the Swedish Radio P1, 2005-12-13, 07.38 and any re-broadcast.
  - d. Le noyau terrestre serait un alliage de fer et magnésium, Science & Vie, Number 1061, Fevrier 2006, P. 30 (France).
- P38 D.A. Andersson, S.I. Simak, N.V. Skorodumova, I.A. Abrikosov, and B. Johansson:  
"Optimization of ionic conductivity in doped ceria"  
Proceedings of the National Academy of Sciences of the United States of America (PNAS) **103**, 3518 (2006).
- Paper Recognitions:*
- a. Materials design of solid electrolytes", an highlight of this paper is published in PNAS 103, 3497 (2006) by Karlheinz Schwarz.

- b. An Editorial Highlight of this paper is published in PNAS online (<http://www.pnas.org/cgi/content/full/103/10/3495>), 2006.

c.

P39 L. Vitos, P.A. Korzhavyi, and B. Johansson:  
"Evidence of large magnetostructural effects in austenitic stainless steels"  
Phys. Rev. Lett. **96**, 117210 (2006).

P40 E. Holmström, W. Olovsson, I. A. Abrikosov, A. M. N. Niklasson, B. Johansson, M. Gorgoi, O. Karis, S. Svensson, F. Schäfers, W. Braun, G. Öhrwall, G. Andersson, M. Marcellini, and W. Eberhardt;  
"A sample preserving deep interface characterization technique."  
Phys. Rev. Lett. **97**, 266106 (2006).

Paper recognition:

*BESSY High-Light*

P41 L. Dubrovinsky, N. Dubrovinskaia, W. A. Crichton, A. S. Mikhaylushkin, S. I. Simak, I. A. Abrikosov, J. S. de Almeida, R. Ahuja, W. Luo, and B. Johansson: "The Noblest of All Metals is Structurally Unstable at High Pressure."  
Phys. Rev. Lett. **98**, 045503 (2007).

Paper Recognitions:

**A.** ESRF (European Synchrotron Radiation Facility) High-Light:  
Press-release

<http://www.esrf.eu/news/pressreleases/changinggold/>

**B.** Radio Echo-Moskva

<<http://echo.msk.ru/programs/granit/49764/>><http://echo.msk.ru/programs/granit/49764/>

**C.** Cited more than 20 times in on-line sources: sciencedayly.com, physnews.com, sciencenewsdaily.org, gazeta.ru, phys.org, etc.

<<http://www.physorg.com/news90510324.html>><http://www.physorg.com/news90510324.html>  
<[http://ec.europa.eu/research/headlines/news/article\\_07\\_03\\_02\\_en.html](http://ec.europa.eu/research/headlines/news/article_07_03_02_en.html)>[http://ec.europa.eu/research/headlines/news/article\\_07\\_03\\_02\\_en.html](http://ec.europa.eu/research/headlines/news/article_07_03_02_en.html)  
<<http://idw-online.de/pages/de/news194722>><http://idw-online.de/pages/de/news194722>  
<<http://www.sciencedaily.com/releases/2007/02/070212183756.htm>><http://www.sciencedaily.com/releases/2007/02/070212183756.htm>  
<<http://www.pro-physik.de/Phy/leadArticle.do?laid=8848>><http://www.pro-physik.de/Phy/leadArticle.do?laid=8848>  
<<http://www.materialsgate.de/mnews/mn-1449.html>><http://www.materialsgate.de/mnews/mn-1449.html>  
<[http://www.alphagalileo.org/index.cfm?\\_rss=1&fuseaction=readrelease&releaseid=518205](http://www.alphagalileo.org/index.cfm?_rss=1&fuseaction=readrelease&releaseid=518205)>[http://www.alphagalileo.org/index.cfm?\\_rss=1&fuseaction=readrelease&releaseid=518205](http://www.alphagalileo.org/index.cfm?_rss=1&fuseaction=readrelease&releaseid=518205)  
<<http://www.weltderphysik.de/de/4245.php?ni=408>><http://www.weltderphysik.de/de/4245.php?ni=408>

<<http://www.chemlin.net/news/2007/feb2007/gold.htm>><http://www.chemlin.net/news/2007/feb2007/gold.htm>  
 <[http://www.innovations-report.de/html/berichte/physik\\_astronomie/bericht-78614.html](http://www.innovations-report.de/html/berichte/physik_astronomie/bericht-78614.html)>[http://www.innovations-report.de/html/berichte/physik\\_astronomie/bericht-78614.html](http://www.innovations-report.de/html/berichte/physik_astronomie/bericht-78614.html)  
 <<http://www.theallineed.com/chemistry/07030103.htm>><http://www.theallineed.com/chemistry/07030103.htm>  
 <<http://www.physnews.com/showlink.php?id=86488>><http://www.physnews.com/showlink.php?id=86488>  
 <[http://www.gazeta.ru/news/science/2007/02/15/n\\_1036041.shtml](http://www.gazeta.ru/news/science/2007/02/15/n_1036041.shtml)>[http://www.gazeta.ru/news/science/2007/02/15/n\\_1036041.shtml](http://www.gazeta.ru/news/science/2007/02/15/n_1036041.shtml)  
 <<http://www.sciencenewsdaily.org/story-90510324.html>><http://www.sciencenewsdaily.org/story-90510324.html>  
 <<http://www.chemport.ru/datenews.php?news=341>><http://www.chemport.ru/datenews.php?news=341>  
 <<http://forum.if.uff.br/viewtopic.php?t=544&sid=45564b1fa614bfd865d52c5987ecc626>><http://forum.if.uff.br/viewtopic.php?t=544&sid=45564b1fa614bfd865d52c5987ecc626>  
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 <<http://www.prophysik.de/Phy/print.do;jsessionid=B67208D2A59A9F5091CFA0ADAF097469?laid=8848>><http://www.prophysik.de/Phy/print.do;jsessionid=B67208D2A59A9F5091CFA0ADAF097469?laid=8848>  
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