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Bibliography for:

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Patents

WO/2008/033560 (World Intellectual Property Organization)
Metal Getter Systems

WO 2006/089068 (World Intellectual Property Organization)
Flexible Multi-Layered Getter

WO 98/03987 (World Intellectual Property Organization)
Method For The Manufacture Of Supported Thin Layers Of Non-Evaporable
Getter Material And Getter Devices Thereby Manufactured

U.S. Patents 5,882,727 and 6,016,034
Method for forming supported thin layers of non-evaporable getter
material and getter devices formed thereby.

Publications

Richard C. Kullberg & Bradley L. Phillip, "Getters and Design to Reliability: A Tool For
Lifetime Assurance," IMAPS Device Packaging, 2012

Richard C. Kullberg, Arthur Jonath, & Robert K. Lowry, "The Unsettled World of Leak
Rate Physics: 1 Atm Large - Volume Considerations Do Not Apply to MEMS Packages, A
Practitioner's Perspective," SPIE, Proceedings Volume 8250, Reliability, Packaging,
Testing, and Characterization of MEMS/MOEMS and Nanodevices XI; 82500H (2012)

Richard C. Kullberg, & Bradley L. Phillip, "Characterization of polymeric getter materials for MEMs/MOEMS and other microelectronic package service." SPIE, Proceedings Volume 7592, Reliability, Packaging, Testing, and Characterization of MEMS/MOEMS and Nanodevices IX; 759206 (2010)

R. K. Lowry, Richard Kullberg, & D. J. Rossiter, "Harsh Environments and Volatiles in Sealed Enclosures," SMTA 2010

Richard C. Kullberg, Bradley L. Phillip & Timothy J. Shepodd, "Advanced Getter Materials for GaAs, RF/MW, MEMs and Other Microelectronic Packages," IMAPS, Advanced Technology Workshop on RF and Microwave Packaging, 2009

Richard Kullberg, R. K. Lowry, D. J. Rossiter, "Gas Compositions in Sealed Medical Device Enclosures," Session THA3: Processes And Innovations In Biomedical Applications, Paper THA35, IMAPS International Conference and Exhibition on Device Packaging, March 2009

R. K. Lowry & R. C. Kullberg, "Examining internal gas compositions of a variety of microcircuit package types & ages with a focus on sources of internal moisture." Reliability, Packaging, Testing, and Characterization of MEMS/MOEMS and Nanodevices VIII, Proc. of SPIE Vol. 7206, 720606-1, SPIE, January 2009

Richard C. Kullberg & Robert K. Lowry, "Hermetic Package Leak Testing Re-Visited," IMAPS International Conference and Exhibition on Device Packaging, March 2008

Richard C. Kullberg & Daniel J. Rossiter, "Measuring Mass Flows in Hermetically Sealed MEMs & MOEMs to Ensure Device Reliability." Reliability, Packaging, Testing, and Characterization of MEMS/MOEMS VII, Proc. of SPIE Vol. 6884 68840L-1, January 2008

Richard C. Kullberg & Robert K. Lowry, "Leaks," Medical Device Materials Task Force, Tempe, AZ December 2007

R. Kullberg, M. Amiotti, & G. Longoni, "Planar Getter Systems for Maintaining the Reliability of Hermetically Sealed Devices," IMAPS MASH, March 2007

Richard C. Kullberg, "Mass Flows Within Hermetic Systems," Medical Device Materials Task Force, Tempe, AZ November 2006

Richard C. Kullberg, "The Agony & The Ecstasy: Business and Product Development for the 21st Century," Minnowbrook 2006

R. P. Claridge, A. Parker, A. Hayden, R. C. Kullberg, M. Borghi, C. Boffito, S. Stewart, G. Lidyard, "An Effective Mitigation for Hydrogen Build-up in Ammunition Containers," Proceedings of the 33rd International Pyrotechnics Seminar, 2006, pp. 823-831

E. Rizzi, A. Conte, C. Carretti, A. Hayden, R. C. Kullberg, R. P. Claridge, A. Parker, G. Lidyard, S. Stewart, "Optimized Hydrogen Getter Materials for Sealed Ammunition Containers," Proceedings of the 33rd International Pyrotechnics Seminar, 2006, pp. 571-577

A book chapter on getters and their applications in MEMs written in conjunction with Dr. Rajeshuni Ramesham of JPL has been accepted for publication in a book edited by Dr. Ajay Malshi of the University of Arkansas. This book was published by Springer in 2006-7.

Richard C. Kullberg, "What's After Nanotech?" Minnowbrook 2005

Richard C. Kullberg, "Extreme Reliability Getter Pumps and the Huygens GCMS," Advanced Technology Workshop on Reliability of Advanced Electronic Packages and Devices in Extreme Cold Environments, IMAPS, 2005

Richard Kullberg, Marco Moraja, Corrado Carretti, "Advances in Hydrogen Gettering Technology," OnBoard Technology, February, 2005, pp. 42-45

Richard Kullberg, "Getters and Gettering: An Overview," MicroTec Magazine, December 2004

Richard C. Kullberg, "Comparison of Different H₂ Getters & a Sieverts Law Gedanken Experiment," Minnowbrook 2004

Richard Kullberg, Heather Florence, Marco Moraja, and Ron Petersen, "Getters for Microelectronic Packages: Solving Hydrogen Degradation Problems," Advanced Packaging, December 2004

Richard C. Kullberg & Heather A. Florence, "Getter Films For Microelectronics Packaging," Minnowbrook 2003

Moraja, M., Amiotti, M., Kullberg, R. C., "New getter configuration at wafer level for assuring long-term stability of MEMS," Proceedings of SPIE Vol. 4980, pp. 260-267 (2003).

Marco Moraja, Marco Amiotti, & Richard C. Kullberg, "Advanced getter solutions at wafer level to assure high reliability to the last

generations MEMs,” IEEE/IRPS, 2003

Richard C. Kullberg, “SAES Getters & High Reliability Microelectronics,” Minnowbrook 2002

Dwight Musgrave & Richard C. Kullberg, “Vacuum Panels: The state of the art in appliance insulation,” IATC 2001

Richard C. Kullberg, Paolo Manini, Francesca Corberi, and Enea Rizzi, “Getters and Desiccants for Lifetime and Performance Maintenance in Vacuum Insulation Panels,” SAMPE, 2001

Stefano Tominetti & Richard C. Kullberg, “Practical Methods for Vacuum Maintenance in Hermetically Sealed MEMS Packages and Directions for the Future,” IMAPS ATW Packaging of MEMS and Related Integrated Nano Systems, November 2001

Richard C. Kullberg, “Processes and materials for creating and maintaining reliable vacuum and other controlled atmospheres in hermetically sealed MEMs packages.” in MEMS Reliability for Critical and Space Applications, Russell A. Lawton, William M. Miller, Gisela Lin, Rajeshuni Ramesham, Editors, Proceedings of SPIE Vol. 3880 p. 75-82 (1999)

Alessio Corazza and Richard C. Kullberg, “Vacuum Maintenance In Hermetically Sealed MEMs Packages,” in Micromachined Devices and Components IV, Patrick J. French and Kevin Chau, Editors, Proceedings of SPIE Vol. 3514 p. 82-89 (1998)

B. M. Basol, V. K. Kapur, R. C. Kullberg. “High-Efficiency CuInSe₂ Solar Cells Prepared By The Two-Stage Process.” Solar Cells, Elsevier Sequoia, #0379-6787/89

B. M. Basol, V. K. Kapur, R. C. Kullberg, and R. L. Mitchell, “CdZnTe Thin Films Prepared By A Two -Stage Process Utilizing Electrodeposition.” Proceedings of the 20th IEEE Photovoltaic Specialists Conference, Las Vegas, NV (1988), p. 1500.

V. K. Kapur, R. C. Kullberg, and C. F. Gay. “Nickel Hydrogen Battery System For Photovoltaic Energy Storage.” Electrochemical Society Fall Mtg., Hollywood, FL, (1980) Extended Abstracts, vol. 80-2. #154

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