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Science and Technology Directorate Publications and Presentations, January 1–December 31, 2004

Compiled by
F.G. Summers
Marshall Space Flight Center, Marshall Space Flight Center, Alabama

December 2005

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TECHNICAL MEMORANDUM

SCIENCE AND TECHNOLOGY DIRECTORATE PUBLICATIONS AND PRESENTATIONS, JANUARY 1–DECEMBER 31, 2004

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2. Science Directorate Publications and Presentations, January 1–December 31, 2003. *NASA/TM—2004–213394*, September 2004. Compiled by F.G. Summers.

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1. Application of the Maximum Amplitude-Early Rise Correlation to Cycle 23, NASA/TP—2004–213281, June 2004. R.M. Wilson and D.H. Hathaway.

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17. Chandra Overview, Astronomical Telescopes and Instrumentation 2004, Glasgow, Scotland, June 21–25, 2004. M.C. Weisskopf.
18. Chandra X-Ray Observations of Jovian Low-Latitude Emissions: Morphological, Temporal, and Spectral Characteristics, 36th Annual Meeting of the American Astronomical Society's Division of Planetary Sciences, Louisville, KY, November 8–12, 2004. A. Bhardwaj, R.F. Elsner, G.R. Gladstone, T.E. Cravens, J.H. Waite, Jr., G. Branduardi-Raymont, and P. Ford.
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23. Coherence Effects in Coupled Optical Resonators, 34th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, January 4–8, 2004. D.D. Smith.
24. Coherence Phenomena in Coupled Optical Resonators, Invited talk to Oklahoma State University, Stillwater, OK, April 8, 2004. D.D. Smith.
25. Compact Flares and CMEs, RHESSI/SOHO/TRACE Workshop: Coordinated Observations of Flares and CMEs, Sonoma, CA, December 8–11, 2004. R.L. Moore and A.C. Sterling.
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30. Cross-Scale Coupling in the Inner Magnetosphere, Huntsville 2004 Workshop, Huntsville, AL, October 18–22, 2004. G.V. Khazanov, D.L. Gallagher, J.F. Spann, Jr., and N. Singh.
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34. Crystallization From Solutions, European Space Foundation—European Space Agency (ESF-ESA) Workshop, Obernai, France, May 3–7, 2004. A.A. Chernov.
35. Crystallization of a $Li_2O.2SiO_2$ Glass Under High Hydrostatic Pressures, 106th Annual Meeting of the American Ceramic Society, Indianapolis, IN, April 18–21, 2004. T. Fuss, C.S. Ray, C.E. Lesher, and D.E. Day.
36. Decades of Data: Extracting Trends from Microgravity Crystallization History, Symposium on Neutron Protein Crystallography, Japan Atomic Energy Research Institute, Tokyo, Japan, February 14–20, 2004. R.A. Judge, E.H. Snell, R. Kephart, and M.J. van der Woerd.
37. Detached Growth of Germanium by Directional Solidification, 14th International Conference on Crystal Growth in Conjunction with the 12th International Conference on Vapor Growth and Epitaxy (XIV ICCG/XII ICVGE), Grenoble, France, August 9–13, 2004. W. Palosz, M.P. Volz, S.D. Cobb, S. Motakef, and F.R. Szofran.
38. Determine Important Nuclear Fragmentation Processes for Space Radiation Protection in Human Space Explorations, Physics Colloquium, University of Alabama in Huntsville, AL, October 5, 2004. Z.-W. Lin.
39. Developing Glassy Magnets From Simulated Composition of Martian Soil for Exploration Applications, Materials Research Society (MRS)—Materials for Space Applications, Boston, MA, November 29–December 3, 2004. N. Ramachandran, C.S. Ray, and J.R. Rogers.
40. Diabatic Initialization of Mesoscale Models in the Southeastern United States: Can 0 to 12h Warm Season QPF Be Improved? 20th Conference on Weather Analysis and Forecasting, Seattle, WA, January 11–15, 2004. W.M. Lapenta, T. Bradshaw, J. Burks, C. Darden, and S. Dembek.

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42. Diffraction and Imaging Study of Imperfections of Protein Crystals With Coherent X-Rays, American Crystallographic Association Annual Meeting 2004, Chicago, IL, July 17–22, 2004. Z.W. Hu, B.R. Thomas, A.A. Chernov, Y.S. Chu, and B. Lai.

43. Diffraction Studies of the Atomic Vibrations of Bulk and Surface Atoms in the Reciprocal and Real Spaces of Nanocrystalline SiC, European Powder Diffraction Conference, Prague, Czech Republic, September 2–5, 2004. S. Stel'makh, E. Grzanka, H. Weber, S. Vogel, W. Palosz, and B. Palosz.

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46. DNA In a Tunnel: A Comfy Spot for Recognition—or—The Structure of BsoBI Complexed With DNA, Invited talk at NASA/Johnson Space Center, Houston, TX, March 26, 2004. M.J. van der Woerd.

47. Early Results of the Convection and Moisture Experiment, 58th Interdepartmental Hurricane Conference, Charleston, SC, February 29–March 5, 2004. R.E. Hood.

48. Electrical Conductivity of HgTe at High Temperatures, 2004 Materials Research Society (MRS) Fall Meeting, Boston, MA, November 29–December 3, 2004. C. Li, S.L. Lehoczky, C.-H. Su, and R.N. Scripa.

49. Electrocomposite of Alumina in Nickel Matrix, 205th Meeting of the Electrochemical Society, San Antonio, TX, May 9–13, 2004. B.D. Ramsey, P. Xiong-Skiba, R. Hulguin, and D. Engelhaupt.

50. Electrodeposition of High Quality Nickel Phosphorous Alloys for Pollution Reduction and Energy Conservations, The American Electroplaters and Surface Finishers Society's Aerospace/Airline Plating and Metal Finishing Forum, Tulsa, OK, March 29–April 1, 2004. B.D. Ramsey and D. Engelhaupt.

51. Electrodeposition of High Quality Nickel Phosphorous Alloys for Pollution Reduction and Energy Conservation, American Electroplaters and Surface Finishers Society Week, Lake Buena Vista, FL, January 26–30, 2004. D. Engelhaupt and B.D. Ramsey.

52. Evidence of "Tether Cutting" Reconnection in the Onset of a Quadrupolar Solar Magnetic Eruption, 204th Meeting of the American Astronomical Society, Denver, CO, May 30–June 3, 2004. D.P. Choudhary, A.C. Sterling, R.L. Moore, and V. Yurchyshyn.

53. Evolution of In-Situ Generated Reinforcement Precipitates in Metal Matrix Composites, International Conference on Solidification Science and Processing, Emerging Trends, Bangalore, India, November 17–20, 2004. S. Sen, S.K. Kar, A.V. Catalina, D.M. Stefanescu, and B.K. Dhindaw.

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54. External and Internal Reconnection in Two Filament-Carrying Magnetic-Cavity Solar Eruptions, 204th Meeting of the American Astronomical Society, Denver, CO, May 30–June 3, 2004. A.C. Sterling and R.L. Moore.

55. Fabrication and Testing of Active and Adaptive Cyanate Ester Composite Mirrors, Mirror Technology Days, Huntsville, AL, August 18–20, 2004, [optics.nasa.gov/tech_days]. H.E. Bennett.

56. Fabrication and Testing of Binary-Phase Fourier Gratings for Non-Uniform Array Generation, Optical Society of America's Diffractive Optics and Micro-Optics Conference, Rochester, NY, October 9–13, 2004. A.S. Keys, R.W. Crow, P.R. Ashley, T.R. Nelson, Jr., J.H. Parker, and E.A. Beecher.

57. Ferroelectric Field Effect Transistor Model Using Partitioned Ferroelectric Layer and Partial Polarization, 16th International Symposium on Integrated Ferroelectrics, Gyeongju, Korea, April 5–8, 2004. T.C. MacLeod and F.D. Ho.

58. Final Results of the Ball AMSD Beryllium Mirror, Mirror Technology Days 2004, Huntsville, AL, August 17–19, 2004. D.M. Chaney.

59. First Chandra Field: The Identification of Leon X–1 (The), 2004 Meeting of the High Energy Astrophysics Division of the American Astronomical Society, New Orleans, LA, September 8–11, 2004. M.C. Weisskopf, T. Aldcroft, R.A. Cameron, P. Gandhi, C. Foellmi, R.F. Elsner, S.K. Patel, and S.L. O'Dell.

60. First Terrestrial Soft X-Ray Aurora Observations by Chandra, Huntsville Modeling Workshop: Challenges to Modeling the Sun-Earth System, Huntsville, AL, October 18–22, 2004. A. Bhardwaj, R.F. Elsner, G.R. Gladstone, J.H. Waite, Jr., T.E. Cravens, N. Ostgaard, S.-W. Chang, A.E. Metzger, and T. Majeed.

61. Fluorescent Approaches to High Throughput Crystallography. 10th International Conference on the Crystallization of Biological Macromolecules, Beijing, China, June 5–8, 2004. E.F. Minamitani and M.L. Pusey.

62. Fluorescent Approaches to High Throughput Crystallography, 2004 International Conference on Structural Genomics, Washington, DC, November 17–21, 2004. M.L. Pusey and E.L. Forsythe.

63. Forecasting Coronal Mass Ejections From Magnetograms, Living With a Star Workshop, Boulder, CO, March 23–26, 2004. D.A. Falconer, R.L. Moore, G.A. Gary, and S. Balasubramanian.

64. Forecasting Coronal Mass Ejections from Magnetograms, Solar, Heliospheric and Interplanetary Environment (SHINE) 2004 Workshop, Big Sky, MT, June 27–July 2, 2004. D.A. Falconer, R.L. Moore, G.A. Gary, and S. Balasubramanian.

65. Future Space Telescope Mirror Technology Requirements, Frontiers in Optics 2004—the 88th Annual Meeting, Rochester, NY, October 10–14, 2004. H.P. Stahl.

66. Gain-Assisted Superluminal Propagation in Coupled Optical Resonators, Optical Society of America Frontiers in Optics Conference (OSA), Rochester, NY, October 10–14, 2004. H. Chang and D.D. Smith.

PRESENTATIONS (Continued)

67. Gamma-Ray Focusing Optics for Small Animal Imaging, IEEE Rome 2004 Medical Imaging Conference, Rome, Italy, October 16–22, 2004. M.J. Pivovaroff, W.C. Barber, W.W. Craig, B.H. Hasegawa, B.D. Ramsey, and C. Taylor.

68. GLAST Burst Monitor (The), 2004 American Physical Society Meeting, Denver, CO, May 1–4, 2004. C.A. Meegan.

69. Global Lightning Activity, India-United States Conference on Space Science, Applications, and Commerce, Bangalore, India, June 21–25, 2004. H.J. Christian.

70. Global Lightning Activity, University of Mexico, Mexico City, Mexico, March 14–20, 2004. H.J. Christian.

71. Grace Collaboration in the Swift Era, 2004 Meeting of the High Energy Astrophysics Division (HEAD) of the American Astronomical Society (AAS), New Orleans, LA, September 8–11, 2004. C. Kouveliotou.

72. High Pressure X-Ray Diffraction Studies of Nanocrystalline Materials, 22nd European Cristallographic Meeting, Budapest, Hungary, August 26–31, 2004. B. Palosz, S. Stel'makh, E. Grzanka, S. Gierlotka, and W. Palosz.

73. Hot Stuff? Thermal Imaging Applied to Cryocrystallography, Hauptmann Woodward Medical Research Institute, Buffalo, NY, April 26, 2004. E.H. Snell.

74. How Consistent Are Recent Variations in the Tropical Energy and Water Cycle Resolved by Satellite Measurements? IGWCO/GEWEX/UNESCO Workshop on Trends in Global Water Cycle Variables, Paris, France, November 3–5, 2004. F.R. Robertson and H.-L. Lu.

75. How Large Scale Flows in the Solar Convection Zone May Influence Solar Activity, NSO Workshop 22: Large Scale Structures and Their Role in Solar Activity, Sunspot, NM, October 18–22, 2004. D.H. Hathaway.

76. Human Exploration Initiative: Space Radiation Measurement Needs (The), American Geophysical Union Fall Meeting, San Francisco, CA, December 13–17, 2004. J.H. Adams, N. Barghouty, M. Bhattacharya, and Zi-Wei Lin.

77. Hyperspectral Imaging on the *International Space Station*: An Innovative Approach to Commercial Development of Space, 42nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 4–8, 2004. R.K. Robinson.

78. Imaging Beyond What Man Can See, Monitoring Science and Technology Symposium, Denver, CO, September 21–24, 2004. G. May and B.K. Mitchell.

79. Improved Edge Performance in MRF, Mirror Technology Days, Huntsville, AL, August 18–20, 2004, [optics.nasa.gov/tech_days]. A. Shorey, A. Jones, P. Dumas, and M. Tricard.

80. Improvements in Electron-Probe Microanalysis: Applications to Terrestrial, Extraterrestrial, and Space Grown Materials, Microscopy and Microanalysis Conference, Savannah, GA, August 1–5, 2004. P.K. Carpenter and J. Armstrong.

PRESENTATIONS (Continued)

81. Incoming Metrology of Segmented X-Ray Mandrels at MSFC, SPIE Conference on Astronomical Telescopes and Instrumentation, Glasgow, Scotland, 2004. M.V. Gubarev, S.L. O'Dell, T.J. Kester, D. Lehner, W. Jones, and M. Smithers.

82. Induced Transparency and Absorption in Coupled Microresonators, Institute of Electrical and Electronics Engineers—Lasers and Electro-Optics (IEEE–LEOS) Society Meeting, San Diego, CA, June 28–30, 2004. D.D. Smith and H. Chang.

83. Intricate Crystal Structure of Dihydrolipoamide Dehydrogenase (E3) With its Binding Protein: Multiple Copies, Dynamic and Static Disorders, American Crystallographic Association, Chicago, IL, July 17–22, 2004. A. Makal, Y.S. Hong, R. Potter, A.K. Vettaikkorumakankauv, L.G. Korotchkina, M.S. Patel, and E.M. Ciszak.

84. Kinetic Roughening Transition and Energetics of Tetragonal Lysozyme Crystal Growth, 10th International Conference on the Crystallization of Biological Macromolecules (ICCBM10), Beijing, China, June 5–8, 2004. S. Gorti, E.L. Forsythe, and M.L. Pusey.

85. Lab on a Chip Application Development for Exploration, Mars Astrobiology Science and Technology Workshop, Washington, DC, September 8–10, 2004. L. Monaco.

86. Lab-On-A-Chip Application Development (LOCAD) Bridging Technology Development, Conference on Micro-Nano-Technologies for Aerospace Applications (CANEUS), Monterey, CA, October 30–November 5, 2004. S.F. Spearing and A. Jenkins.

87. Land Use and Change, Mesoamerican Environmental Information System—NASA Monitoring and Visualization System (SIAM-SERVIR) Workshop, Panama City, Panama, August 17–20, 2004. D.E. Irwin.

88. Land Use and Change, Training Package Presentation to Mesoamerican Environmental Information System—NASA Monitoring and Visualization System (SIAM-SERVIR) Workshop, Panama City, Panama, July 10–17, 2004. D.E. Irwin.

89. Large- and Small-Scale Ring Current Electrodynamic Coupling, 30th Anniversary Yosemite Workshop on Inner Magnetosphere Interaction, Yosemite, CA, February 3–6, 2004. G.V. Khazanov.

90. Lessons for STEP from GP-B, Testing the Quivalence Principle on Ground and in Space, Pescara, Italy, September 20–24, 2004. J.J. Kolodziejczak.

91. Low Gravity Materials Science Research for Space Exploration, 4th International Conference on Solidification and Gravity, Miskolc, Hungary, September 6–9, 2004. R.G. Clinton, Jr., E.B. Semmes, R.A. Schlagheck, J.A. Bassler, M.J. Wargo, G.B. Sanders, and N.I. Marzwell.

92. Low Gravity Rapid Thermal Analysis of Glass, XX International Congress on Glass, Kyoto, Japan, September 26–October 1, 2004. D.S. Tucker and E.C. Ethridge.

93. Magnetic Control of Convection During Protein Crystallization, International Conference on Crystal Growth (ICCG–14), Grenoble, France, August 9–13, 2004. N. Ramachandran and F.W. Leslie.

PRESENTATIONS (Continued)

94. The Magnetic Field in the Outer Heliosphere, Arcetri Astrophysical Observatory, Florence, Italy, April 29, 2004. S.T. Suess.

95. The Magnetic Field in the Outer Heliosphere, UC IGPP 3rd Annual International Astrophysics Conference, Riverside, CA, February 8–13, 2004. S.T. Suess.

96. Magnetosphere-Ionosphere Coupling and Associated Ring Current Energization Processes, American Geophysical Union Monograph on Astrophysical Particle Acceleration in Geospace and Beyond, 2004. M.W. Liemohn and G.V. Khazanov.

97. Magnetospheric Magnetic Reconnection With Southward IMF by a 3D EMPM Simulation, Explosive Phenomena in Magnetized Plasma—New Development of Reconnection Research, Kyoto, Japan, March 17–19, 2004. K.I. Nishikawa, X.Y. Yan, D.S. Cai, and B. Lembege.

98. Main-Sequence CMEs as Magnetic Explosions: Compatibility With Observed Kinematics, 2004 Shine Workshop, Big Sky, MT, June 26–July 2, 2004. R.L. Moore, D.A. Falconer, and A.C. Sterling.

99. Materials Processing in Space: Model Experiments Aboard the *International Space Station*, Vanderbilt University, Nashville, TN, April 19, 2004. R.N. Grugel.

100. Meeting NASA's Mission Through Commercial Partnerships, 42nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 4–8, 2004. M.E. Nall.

101. Metallic Hydrogen and Nano-Tube Magnets, Army's National Ground Intelligence Center Workshop (MAD Scientist 04), Charlottesville, VA, November 3–5, 2004. J.W. Cole.

102. Microanalytical Efforts in Support of NASA's Materials Science Programs, Microscopy and Microanalysis 2004 Conference, Savannah, GA, August 1–5, 2004. D.C. Gillies.

103. Microgravity Materials Research, Space Technology and Applications International Forum (STAIF), Albuquerque, NM, February 8–11, 2004. P.A. Curreri and L. Sibille.

104. Mirror Requirements for SAFIR, From Spitzer to Herschel and Beyond: The Future of Far-IR Space Astrophysics, Pasadena, CA, June 7–10, 2004. H.P. Stahl and W.S. Smith.

105. Modern Solar Mysteries, Vanderbilt University, Nashville, TN, April 8, 2004. D.H. Hathaway.

106. MODIS Data in AWIPS: A Precursor of NPOESS and GOES-R Capabilities, National Weather Association Annual Meeting, Portland, OR, October 16–21, 2004. G.J. Jedlovec, S.L. Haines, R.J. Suggs, T. Bradshaw, and J. Burks.

107. MSFC Nuclear Propulsion Materials Development, Tri-lateral Alliance Collaborative Technical Forum, Chattanooga, TN, May 4–6, 2004. J.R. Rogers and B. Cook.

108. Multiparametric Determination of Radiation Risk, NASA Cell Science Conference, Palo Alto, CA, February 26–28, 2004. R.C. Richmond.

109. Multivariate Statistical Inference of Lightning Occurrence, and Using Lightning Observations, International Lightning Detection Conference, Helsinki, Finland, June 7–9, 2004. D.J. Boccippio.

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110. The Mystery of Gamma-Ray Bursts, Rice University Space Exploration Series, Houston, TX, March 22, 2004. G.J. Fishman.

111. The NASA Materials Science Research Program—It's New Strategic Goals and Opportunities, 2nd International Symposium on Physical Sciences in Space, Held jointly with Spacebound 2004, Toronto, Canada, May 23–27, 2004. R.A. Schlagheck and E. Stagg.

112. NASA Short-Term Predication Research and Transition (SpoRT) Center: A Collaborative Model for Accelerating Research into Operations (The), 20th Conference on Weather Analysis and Forecasting, Seattle, WA, January 11–15, 2004. S.J. Goodman, W.M. Lapenta, G.J. Jedlovec, J.C. Dodge, and T. Bradshaw.

113. Near Real Time Derived Products From MODIS, 13th Conference on Satellite Meteorology and Oceanography, American Meteorological Society, Norfolk, VA, September 20–24, 2004. R.J. Suggs, G.J. Jedlovec, and S.L. Haines.

114. The Nonlinear Coupling of Alfven and Lower Hybrid Waves in Space Plasma, 2004 National Radio Science Meeting, Boulder, CO, January 4–8, 2004. G.V. Khazanov.

115. A Novel and New Ultra-Lightweight Reinforcement for Producing Low Mass Optical Systems, Mirror Technology Days 2004, Huntsville, AL, August 17–19, 2004. W. Kobell.

116. A Novel Metal-Ferroelectric-Semiconductor Field-Effect Transistor Memory Cell Design, 16th International Symposium on Integrated Ferroelectrics, Gyeongju, Korea, April 5–8, 2004. T.A. Phillips, F.D. Ho, and M. Bailey.

117. The Nucleation and Growth of Protein Crystals, Fall Seminar Series at the University of Toledo, Toledo, OH, November 4–6, 2004. M.L. Pusey.

118. Observations of Magnetars, The Electromagnetic Spectrum of Neutron Stars, Marmaris, Turkey, June 13–18, 2004. C. Kouveliotou.

119. Observations of Soft Gamma Repeaters, XXII Texas Symposium on Relativistic Astrophysics, Stanford, CA, December 13–17, 2004. C. Kouveliotou.

120. Observations of X-Ray Afterglows, Workshop on Gamma-Ray Bursts and Supernovae Connection, Seattle, WA, July 5–7, 2004. C. Kouveliotou.

121. Optimizing Crystal Volume for Neutron Diffraction Studies, Japanese Atomic Energy Research Institute (JAER), Tokai-mura, Japan, February 16–17, 2004. E.H. Snell.

122. The Origin and Evolution of Deep Plasmaspheric Notches, Inner Magnetosphere Interactions Workshop, Yosemite, CA, February 2–7, 2004. D.L. Gallagher, M.L. Adrian, and M.W. Liemohn.

123. Particle Acceleration, Magnetic Field Generation, and Emission in Relativistic Shocks, Workshop on Relativistic Plasma in Magnetic Field, Stanford, CA, August 16–18, 2004. K.I. Nishikawa, C. Hededal, P.E. Hardee, G.A. Richardson, R.D. Preece, H. Sol, and G.J. Fishman.

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124. Particle Acceleration, Magnetic Field Generation, and Emission in Relativistic Shocks, 8th Meeting of the American Astronomical Society High Energy Astrophysics Division, New Orleans, LA, September 8–11, 2004. K.I. Nishikawa, C. Hededal, P.E. Hardee, G.A. Richardson, R.D. Preece, H. Sol, and G.J. Fishman.

125. Particles Growing in Solution: Depletion Forces and Instability of Homogeneous Particle Distribution, International Symposium on Physical Sciences, Toronto, Canada, May 24–27, 2004. A.A. Chernov.

126. Performance of the Zero Degree Detector, Committee on Space Research (COSPAR) Assembly, Paris, France, July 18–25, 2004. M.J. Christl.

127. Photon Dynamics in Coherently Coupled Optical Resonators, Optical Society of America Frontiers in Optics Conference (OSA), Rochester, NY, October 10–14, 2004. D.D. Smith, H. Chang, and K.A. Fuller.

128. Plans for Extreme Energy Cosmic Ray Observations from Space, Seminar at Princeton University Physics Department, Princeton, NJ, March 11, 2004. J.H. Adams, Jr.

129. The Plasmoid Thruster Experiment (PTX), 46th Annual Meeting of the Division of Plasma Physics, Savannah, GA, November 15–19, 2004. A. Martin, R. Eskridge, P. Fimognari, S.J. Koelfen, and M. Lee.

130. Poco Graphite Inc. SuperSic 0.25m Mirror Cryogenic Test Result, Mirror Technology Days, Huntsville, AL, August 18–20, 2004, and posted on website optics.nasa.gov/tech_days. R. Eng, H.P. Stahl, W. Hogue, and J. Hadaway.

131. Poco Graphite Inc. SuperSic 0.25m. Mirror Cryogenic Test Result, Mirror Technology Days 2004, Huntsville, AL, August 17–19, 2004. R. Eng, H.P. Stahl, W. Hogue and J. Hadaway.

132. Pore Formation and Mobility Investigation (PFMI): Concept, Hardware Development, and Initial Analysis of Experiments, Invited talk to the European Space Agency, Paris, France, April 4–11, 2004. R.N. Grugel.

133. Pore Formation and Mobility Investigation: The Apparatus, Operations, Science Obtained, and Potential for Continued Usage (The), Institute of Electrical and Electronic Engineers—Lasers and Electro-Optics (IEEE–LEOS) Society Meeting, San Diego, CA, June 28–30, 2004. R.N. Grugel, P. Luz, G.A. Smith, R. Spivey, S. Sen, and A.V. Anilkumar.

134. Purification and Crystallization of Murine Myostatin a Negative Regulator of Muscle Mass, American Society for Biochemistry and Molecular Biology (ASBMB), Boston, MA, June 12–16, 2004. Y.S. Hong, D. Adamek, K. Bridge, C.C. Malone, R.B. Young, T.Y. Miller, and L.J. Karr.

135. Putting Us on the Map: Remote Sensing Investigation of the Ancient Maya Landscape, American Anthropological Association, San Francisco, CA, November 17–21, 2004. T.L. Sever and W. Saturno.

136. Quiet-Region Filament Eruptions, 204th Meeting of the American Astronomical Society, Denver, CO, May 30–June 3, 2004. D.P. Choudhary and R.L. Moore.

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137. Radiation Hazards and Countermeasures for Human Space Flight, 2004 NASA/Jet Propulsion Laboratory Workshop on Physics for Planetary Exploration, Solvang, CA, April 19–22, 2004. J.H. Adams.

138. Radiation Risk Assessment of the Individual Astronaut—A Complement to Radiation Interest at NIH, Invited talk to National Institute of Health (NIH), Rockville, MD, April 19, 2004. R.C. Richmond.

139. Recent Progress in Understanding the Sun's Magnetic Dynamo, Vanderbilt University, Nashville, TN, April 8, 2004. D.H. Hathaway.

140. Ring Current Electrodynamic Coupling, 35th COSPAR Meeting, Paris, France, July 18–24, 2004. G.V. Khazanov.

141. The Role of Auroral Imaging in Understanding Ionosphere-Inner Magnetosphere Interactions, 30th Anniversary Yosemite Workshop Inner Magnetosphere Interactions, Yosemite, CA, February 3–6, 2004. J.F. Spann, Jr., G.V. Khazanov, and S.B. Mende.

142. Science Using an Electrostatic Levitation Furnace in the MUCAT Sector at the APS, High Energy Workshop, Argonne National Laboratory, Argonne, IL, August 9–10, 2004. A. Goldman, K.F. Kelton, and J.R. Rogers.

143. Seeing the Invisible With the IMAGE Mission, Seminar—Royal Observatory Belgium, Brussels, Belgium, May 5, 2004. D.L. Gallagher.

144. Semiconductor Crystal Growth in Static and Rotating Magnetic Fields, International Workshop on Materials Analysis and Processing in Magnetic Fields, Tallahassee, FL, March 17–19, 2004. M.P. Volz.

145. Simultaneous Chandra X-Ray, HST UV, and Ulysses Radio Observations of Jupiter's Aurora, 2004 Meeting of the High Energy Astrophysics Divisions (HEAD) of the American Astronomical Society (AAS), New Orleans, LA, September 8–11, 2004. R.F. Elsner, A. Bhardwaj, J.H. Waite, Jr., N. Lugaz, T. Majeed, T. Cravens, G.R. Gladstone, P. Ford, D. Grodent, R. MacDowell, and M. Desch.

146. A Slow Streamer Blowout at the Sun and Ulysses, Ulysses Science Working Tem Meeting, Noordwijk, The Netherlands, April 22–23, 2004. S.T. Suess.

147. Solar Spicules: Prospects for Breakthroughs in Understanding With Solar-B, Committee on Space Research (COSPAR) Assembly, Paris, France, July 18–25, 2004. A.C. Sterling.

148. Solutal Convection Around Growing Protein Crystal and Diffusional Purification in Space, International Symposium on Physical Sciences, Toronto, Canada, May 24–27, 2004. A.A. Chernov and C.P. Lee.

149. Solution-Phase Processes of Macromolecular Crystallization, 10th International Conference on the Crystallization of Biological Macromolecules, Beijing, China, June 5–8, 2004. E.F. Minamitani and M.L. Pusey.

PRESENTATIONS (Continued)

150. Space Exploration Technologies Developed Through Existing and New Research Partnerships Initiatives, 55th International Astronautical Congress, Vancouver, Canada, October 4–8, 2004. M.E. Nall and J. Casas.

151. Space Weather, MSFC Educator Resource Center, Teacher Workshop, Space and Rocket Center, Huntsville, AL, January 27, 2004. D.L. Gallagher.

152. Spatially Varying Spectrally Thresholds for MODIS Cloud Detection, 13th Conference on Satellite Meteorology and Oceanography, American Meteorological Society, Norfolk, VA, September 20–24, 2004. S.L. Haines, G.J. Jedlovec, and F. LaFontaine.

153. Specific Impulse Definition for Ablative Laser Propulsion, Third International Symposium on Beamed Energy Propulsion, Troy, NY, October 11–13, 2004. D.A. Gregory and K.A. Herren.

154. Status of AMSR–E Science Investigator-Led Processing System (AMSR–E SLIPS), AMSR–E Meeting, Tokyo, Japan, April 16–21, 2004. H.M. Goodman.

155. Status of the Ablative Laser Propulsion Studies, 15th Advanced Space Propulsion Workshop, Pasadena, CA, June 15–17, 2004. K.A. Herren, J. Lin, T. Cohen, A.V. Pakhomov, and M. Thompson.

156. Steps in Solution Growth: Revised Gibbs-Thomson Law, Turbulence and Morphological Stability, International Conference on Crystal Growth (ICCG–14), Grenoble, France, August 9–13, 2004. A.A. Chernov, L.N. Rashkovich, and P.G. Vekilov.

157. Strategic Research Directions in Microgravity Materials Science, 42nd AIAA Aerospaces Sciences Meeting, Reno, NV, January 5–8, 2004. R.G. Clinton, Jr., E.B. Semmes, B. Cook, M.J. Wargo, and N.I. Marzwell.

158. Strategic Research Directions in Microgravity Materials Science, Transformational Space Launch and Operations Technologies Conference, Washington, DC, May 24–26, 2004. R.G. Clinton, Jr.

159. Structural Basis for the Catalytic Activity of Human Serine/Threonine Protein Phosphatase Type 5 (PP5), Federation of American Societies for Experimental Biology (FASEB), Snowmass Village, CO, July 17–22, 2004. M.R. Swingle, E.M. Ciszak, and R. Honkanen.

160. Synthesis of Sol-Gel Precursors for Ceramics from Lunar and Martian Soil Simulars, Space Resource Roundtable Conference, Golden, CO, November 1–3, 2004. L. Sibille, J.A. Gavira-Gallardo, and D. Hourlier-Bahloul.

161. Te- and Zn-doped InSb Crystals Grown in Microgravity, International Conference on Crystal Growth XIV, Grenoble, France, August 9–13, 2004. A.G. Ostrogorsky, C. Marin, M.P. Volz, W.A. Bonner, and T. Duffar.

162. Testing Fractal Methods on Observed and Simulated Solar Magnetograms, American Astronomical Society, Atlanta, GA, January 4–8, 2004, M. Adams, D.A. Falconer, J.K. Lee, and C. Jones.

PRESENTATIONS (Continued)

163. Thermophysical Properties of Selected II–VI Semiconducting Melts, 4th International Conference on Solidification and Gravity, Miskolc, Hungary, September 6–10, 2004. C. Li, C.-H. Su, S.L. Lehoczky, R.N. Scripa, H. Ban, and B. Lin.

164. The Thiamin-Pyrophosphate-Motif, Keystone Symposium, Snowbird, UT, April 13–15, 2004. E.M. Ciszak and P. Dominiak.

165. Three-Dimensional High Resolution Optical/X-Ray Stereoscopic Tracking Velocimetry, American Society of Mechanical Engineers (ASME), International Mechanical Engineering Congress, Anaheim, CA, November 13–20, 2004. S.S. Cha and N. Ramachandran.

166. Total Lightning Activity as Observed From Space, Darwin Lightning Observatory Workshop, Osaka, Japan, March 7–10, 2004. H.J. Christian.

167. Total Lightning Activity as Observed From Space, Meeting With National Space Projects Office on Lightning Mapper, Taipei, Taiwan, March 4–5, 2004. H.J. Christian.

168. Transition from Research to Operations: Assessing Value of Experimental Forecast Products Within the NWSFO Environment, 20th Conference on Weather Analysis and Forecasting, Seattle, WA, January 11–15, 2004. W.M. Lapenta, R. Wohlman, T. Bradshaw, J. Burks, G.J. Jedlovec, S.J. Goodman, C. Darden, and P.J. Meyer.

169. Triggering of the Two X-Class Flares of 28 and 29 October 2003, 204th Meeting of the American Astronomical Society, Denver, CO, May 30–June 3, 2004. D.P. Choudhary, R.L. Moore, D.A. Falconer, S. Pojoga, T.-S. Huang, S. Krucker, and W. Uddin.

170. Triphasic Tooling With Small Oriented Diamonds for Turning and Smoothing Lightweight Mirrors, Mirror Technology Days 2004, Huntsville, AL, August 17–19, 2004. O.A. Voronov, G.S. Tompa, B.H. Kear, and V. Veress.

171. Tropical Cyclone Precipitation Types and Electrical Field Information Observed by High Altitude Aircraft Instrumentation, 26th AMS Conference on Hurricanes and Tropical Meteorology, Miami, FL, May 3–7, 2004. R.E. Hood, R.J. Blakeslee, D. Cecil, F. LaFontaine, G.M. Heymsfield and F. Marks.

172. Tropical Diabatic Heating and the Role of Convective Processes as Represented in Several Contemporary Climate Models, 84th AMS Annual Meeting, Seattle, WA, January 11–15, 2004. F.R. Robertson, J. Roads, R. Oglesby, and S. Marshall.

173. Two-Pulsed Technique for Ablative Laser Propulsion: Force Measurement in Vacuum, Third International Symposium on Beamed Energy Propulsion, Troy, NY, October 11-13, 2004. K.A. Herren, T. Cohen, J. Lin, and A.V. Pakhomov.

174. Unresolved Issues with Inner Magnetosphere-Ionosphere Coupling, Outer Radiation Belt Injection, Transport, Acceleration and Loss Satellite (ORBITALS) Workshop, Banff, Canada, September 23-24, 2004. D.L. Gallagher and G.V. Khazanov.

175. Use of EOS Data in a WIPS for Weather Forecasting, 20th Conference on Weather Analysis and Forecasting, Seattle, WA, January 11-15, 2004. G.J. Jedlovec, S.L. Haines, R.J. Suggs, T. Bradshaw. C. Darden, and J. Burks.

PRESENTATIONS (Continued)

176. Use of SolidEdge as an Engineering Tool to Support NASA Projects (The), Solid Edge User Summit, Orlando, FL, June 2-4, 2004. G. Thornton

177. What the Long-Term Sunspot Record Tells Us About Space Climate, First International Symposium on Space Weather, Oulu, Finland, June 20-23, 2004. D.H. Hathaway.

178. When Earth Songs Filled the Void of Space, Birmingham Astronomical Society, Birmingham, AL, January 20, 2004. D.L. Gallagher.

179. X-MIME: An Imaging X-Ray Spectrometer for Detailed Study of Jupiter's Icy Moons and the Planet's X-Ray Aurora, 36th Annual DPS Meeting, Louisville, KY, November 8–12, 2004. R.F. Elsner, B.D. Ramsey, J.H. Waite, Jr., P. Rehak, R.E. Johnson, J.F. Cooper, and D.A. Swartz.

180. X-Ray and EUV Observations of CME Eruption Onset, International Astronomical Meeting Symposium 226, Coronal and Stellar Mass Ejections, Beijing, China, September 13–17, 2004. A.C. Sterling.

181. X-Ray Microscopic Characterization of Protein Crystals, 10th International Conference on the Crystallization of Biological Macromolecules (ICCBM), Beijing, China, June 5–8, 2004. Z.W. Hu, A.M. Holmes, B.R. Thomas, A.A. Chernov, Y.S. Chu, and B. Lai.

182. X-Ray Polarimetry Explorer (XPE) (The), X-Ray Polarimetry Conference, Stanford, CA, February 9–11, 2004. B.D. Ramsey.

183. X-Ray Scattering Polarimeters: An Overview, X-Ray Polarimetry Workshop, Stanford, CA, February 9–11, 2004. M.C. Weisskopf, R.F. Elsner, B.D. Ramsey, and S.L. O'Dell.

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