PRELIMINARY PROGRAM
Forum on Concepts and Approaches for Jupiter Icy Moons Orbiter
June 12–14, 2003

Titles followed by a number in brackets reflect presentations that are accompanied by supporting abstracts. To view the abstracts, simply use the hand tool of your Acrobat Reader to click on the title of the presentation.

THURSDAY, JUNE 12, 2003

7:00 a.m. Continental Breakfast in Great Room
Poster installations by presenters

PLENARY SESSION
8:00 a.m.–2:20 p.m.
Lecture Hall

8:00–8:30 a.m. Colleen Hartman, Director, Solar System Exploration Division, NASA Headquarters
Introductions
Goals of Forum
JIMO Science Capabilities

8:30 a.m. Alan Newhouse, Director, Project Prometheus Program, NASA Headquarters
JIMO Project Background Briefing

9:00 a.m. John Casani, JIMO Project Manager, Jet Propulsion Laboratory
JIMO Mission Characteristics

9:45 a.m. John Rummel, Planetary Protection, NASA Headquarters
Planetary Protection

10:00–10:15 a.m. Break

10:15 a.m. Ron Greeley, Arizona State University
Torrence Johnson, Jet Propulsion Laboratory
JIMO Science Definition Team

Thematic Briefings — Background and Key Issues

10:30 a.m. Chris McKay, Ames Research Center
Astrobiology

10:50 a.m. Louise Prockter, Surface Science, Applied Physics Laboratory
Remote Sensing: Geomorphology

11:10 a.m. Diana Blaney, Surface Science, Jet Propulsion Laboratory
Remote Sensing: Geology and Geochemistry

11:30 a.m. Nick Makris, Subsurface Science, Massachusetts Institute of Technology
Surface Geophysics and Geochemistry

11:50 a.m. Krishan Khurana, Magnetospheric Physics, UCLA
Magnetospheres, Satellite Interactions, Atmospheres, Geophysics, and Geodesy

12:10–1:20 p.m. Lunch

1:20 p.m. David Stevenson, Geophysics/Interiors, California Institute of Technology
Geophysics: Global and Interior Structure

* Denotes speaker.

1:40 p.m. Don Blankenship, Subsurface Sounding, The University of Texas at Austin
Geophysics: Subsurface-Radar

2:00 p.m. Andy Ingersoll, Atmospheres, California Institute of Technology
Atmospheric Science

2:20 p.m. Torrence Johnson, JIMO Project Scientist, Jet Propulsion Laboratory
Charge to Thematic Breakout Sessions

THURSDAY, JUNE 12, 2003 (CONTINUED)

CONCURRENT THEMATIC BREAKOUT SESSIONS
2:30–6:00 p.m.

Breakout Session on Astrobiology
Conference Room 1

Chairs: **C. P. McKay**
D. M. Warmflash

Prieto-Ballesteros O. * Gómez-Elvira J. Fernandez-Remolar D. Gómez F. Parro V. Amils R.
Fluorescence Biological Analysis (FBA) for the Astrobiology Exploration of Europa **[#9008]**

Koukol R. C. *
Planetary Protection Considerations for JIMO **[#9075]**

Prieur D. *
Metabolic Signatures for Life Detection on Europa **[#9082]**

Schulze-Makuch D. * Irwin L. N.
Putative Biospheres for Europa and Ganymede: Modeling and Biosignature Detection **[#9083]**

Carsey F. D. Hecht M. H. Wilcox B. H. Behar A. E. * Holland P. M.
An Examination of Issues Related to a Europa Subsurface Component for the JIMO Mission **[#9085]**

Kargel J. S. *
Europa's Upper Crust and Ocean Compositions and the Ocean's Suitability as a Potential Habitat **[#9080]**

Lipps J. H. * Pehl C. Rieboldt S.
The Search for Life on Europa: Jupiter Icy Moons Orbiter Objectives **[#9088]**

Flynn M. T. *
Life Detection: Mars and Beyond Workshop — A Summary as it Relates to JIMO **[#9091]**

Breakout Session on Remote Sensing: Geomorphology
Berkner Room F

Chairs: **L. M. Prockter**
P. M. Schenk

Callisto Science

Moore J. M. * Schenk P. M. McKinnon W. B.
Callisto: A World in Its Own Right **[#9025]**

Ganymede Science

Head J. W. III* Patterson G. W. Collins G. C. Pappalardo R. T. Prockter L. M.
Global Geologic Mapping of Ganymede: Outstanding Questions and Candidate Contributions from JIMO **[#9039]**

Collins G. C. *
Toward a Global Understanding of Ganymede Tectonics **[#9045]**

Europa Science

Spaun N. A. *
The Importance of Chaos and Lenticulae on Europa for the JIMO Mission **[#9022]**

Hoppa G. V. * Greenberg R.
Observational Selection Effects in Europa Image Data **[#9028]**

General Science

Schenk P. M. *
Topographic Mapping of the Jovian Icy Moons from Orbit **[#9072]**

Giese B. * Oberst J.
Galileo Stereo Imaging of Ganymede and Europa **[#9026]**

Schenk P. M. * Moore J. M.
Impact Cratering: A Critical Jovian Icy Moons Science Objective **[#9073]**

Bierhaus E. B. *
Small Craters and Surface Properties of the Icy Galilean Satellites **[#9053]**

Instrumentation

McEwen A. S. *
High-Resolution Imaging and Topography from JIMO: The HiRISE Model **[#9007]**

Kaplan M. L. * Dissly R. W.
Pushbroom Sensor Concepts for the JIMO Mission **[#9048]**

Chapman C. R. * Merline W. J.
Studies of Cratering on Jupiter's Icy Moons **[#9058]**

Breakout Session on Remote Sensing: Geology and Geochemistry
Berkner Rooms A,B,C

Chairs: **D. L. Blaney**
J. R. Spencer

Instrumentation

Spiers G. D. *
Laser Remote Sensing and Lidar Measurements for Planetary Bodies **[#9076]**

Blasius K. R. * Chrien T. G. Silverman S. H. Schueler C. S. Puschell J. J. Greenfield M. J. Dykeman D. A. Wang J.
Advanced Mapping Imager for the JIMO Mission **[#9068]**

Sellar R. G. * Kirkland L. E.
Imaging Spectrometer with High-Responsivity and No Moving Parts **[#9067]**

Gunapla S. * Bandara S. Ivanov A.
High Sensitivity Long-Wavelength Infrared QWIP Focal Plane Array Based Instrument for Remote Sensing of Icy Satellites **[#9036]**

General Science

Denk T. * Jaumann R. Wagner R.
High-Resolution Color Observations of Jovian Satellites **[#9023]**

Dalton J. B. *
Hydrates and Clathrates: Requirements for Spectroscopic Discrimination on Icy Moons **[#9051]**

Hansen G. B. * Hibbitts C. A. McCord T. B.
Ice and Non-Ice Properties of the Icy Galilean Satellite Surfaces from Infrared Spectra **[#9005]**

Hibbitts C. A. * Hansen G. B. McCord T. B.
High-Spectral-Resolution 6 to 12-μm Reflection Spectroscopy of the Icy Galilean Satellites **[#9040]**

Spencer J. R. *
Temperature Mapping of the Icy Galilean Satellites from JIMO **[#9078]**

Europa Science

Phillips C. B. * Chyba C. F.
Methods for Detecting Current Geological Activity on Europa **[#9018]**

Carlson R. W. *
A Brief Review of Infrared, Visible, and Ultraviolet Spectroscopy of Europa and Recommendations for the Jupiter Icy Moons Orbiter **[#9042]**

Io Science

Spencer J. R. * Lopes R. Smythe W. M.
Io Science Opportunities with JIMO: Ultraviolet and Visible **[#9032]**

Smythe W. D * Lopes R. Spencer J. R.
Io Science Opportunities with JIMO: Observing in the Infrared **[#9052]**

Breakout Session on Surface Geophysics and Geochemistry
Hess Room

Chairs: **N. C. Makris**
W. R. Moore

Dombard A. J. *
Calibrating the Crater Production Curve Using Topographic Relaxation and How JIMO Can Help **[#9084]**

Kargel J. S. *
Orbit-based Geophysical and Geochemical Means to Detect Possible Transient Outburst/Eruptive Events (TOEs) on Europa's Surface or on Its Seafloor **[#9079]**

Kargel J. S. *
To Understand Europa We Must Investigate the Composition of Europa's Atmosphere and of Io's Emissions Inward of 9.5R_J **[#9041]**

Ahrens T. J. * Beauchamp J. L. Austin D. E. Willis M. J. Shen A. H.
Dustbuster: A Proposed JIMO Instrument, for Jovian Satellite and Ring Dust Analyzer **[#9006]**

Liou J.-C. * Matney M. Stansbery E.
A Large-Area Particle Sensor for Near-Earth Orbital Debris, Interplanetary Meteoroids, and Dust in the Jovian System **[#9054]**

Krüger H. Srama R. Johnson T. V. * Henkel H. von Hoerner H. Koch A. Horányi M. Grün E. Kissel J. Krueger F.
A Secondary Ion Mass Analyzer for Remote Surface Composition Analysis of the Galilean Moons **[#9011]**

Wong M. * Berthelier J. Carlson R. Cooper J. Johnson R. Jurac S. Leblanc F. Shematovich V.
Measurement of Surface Composition for the Icy Galilean Moons Via Neutral and Ion Mass Spectrometry from Orbit with JIMO **[#9037]**

Hays C. C. * Klein G. A.
Europa Science Platforms and Kinetic Emergy Probes **[#9077]**

Arakawa M. *
Direct Measurements of Heat Flux and Surface Strain on Europa by Penetrater **[#9012]**

Shirley J. H. * Zimmerman W. F. Strauss W. Ivlev R. Duong T. Hunter D. Slimko E. Nacaise F. Archer E. Nesmith B. Behar A.
Icy Satellites Impactor Probes for the Jovian Icy Moons Orbiter **[#9043]**

Banerdt W. B. *
Geophysical Probes of the Icy Satellites of Jupiter **[#9060]**

D'Hondt S. L. * Miller J. H.
Science and Engineering Potential of an Icy Moon Lander **[#9046]**

Blanc M. *
Probing the Internal Structures of the Galilean Satellites with a Complement of Geophysics Investigations **[#9087]**

Moore M. H. * Hudson R. L. Carlson R. W.
Radiation Synthesis of New Molecules on Jupiter's Icy Satellites **[#9016]**

Breakout Session on Magnetospheres, Satellite Interactions, Atmospheres, Geophysics, and Geodesy
Berkner Room D

Chairs: **K. K. Khurana**
W. S. Kurth

Crary F. J. * Young D. T.
Core Plasma Measurements for the Jupiter Icy Moons Orbiter **[#9047]**

McHarg M. G. * Enloe C. L. Krause L. A. Herrero F. A.
Miniaturized Plasma and Neutral Diagnostics for JIMO **[#9056]**

Mauk B. H. * Paranicas C. P. Cooper J. F.
Diagnosing Interactions Between Jovian Satellites and Their Energetic Charged and Neutral Particle Environments **[#9089]**

Saur J. * Mauk B. H. Paranicas C. P. Neubauer F. M.
Diagnostic Magnetospheric Parameters for Probing Icy Satellites' Interiors **[#9014]**

Schulz M. * Fuselier S. A. Chenette D. L. Mobilia J. Magoncelli A. L. Gaines E. E.
Jovian Energetic-Particle Measurements and X-Ray Images **[#9070]**

Harris W. M. Roesler F. L. * Ben-Jaffel L. Ballester G. E. Oliversen R. J. Morgenthaler J. P. Mierkiewicz E.
Applications of High Étendue Line-Profile Spectro-Polarimetry to the Study of the Atmospheric and Magnetospheric Environments of the Jovian Icy Moons **[#9059]**

Green J. L. * Reinisch B. W. Song P. Fung S. F. Benson R. F. Taylor W. W. L. Cooper J. F. Garcia L. Gallagher D.
Remote Radio Sounding Science for JIMO **[#9013]**

Kurth W. S. * Gurnett D. A. Plaut J. Bolton S. J. Farrell W. M. Desch M. D. Kaiser M. L. Zarka P. Lecacheux A. Bale S. D. Canu P.
A Low Frequency Radio and Radar Instrument to Explore Jupiter's Icy Moons **[#9019]**

Dougherty M. K. * Balogh A. Carr C. M. Kellock S.
A Magnetometer Instrument for the JIMO Mission **[#9081]**

Breakout Session on Interiors and Subsurface
Lecture Hall

Chairs: **D. J. Stevenson** **D. Blankenship**
W. B. McKinnon **D. P. Winebrenner**

McKinnon W. B. *
Internal Structures of the Galilean Satellites: Unfinished Business and the Road Ahead **[#9057]**

Moore W. B. * Schubert G.
The Tidal Response of Ganymede and Callisto With and Without Liquid Water Oceans **[#9002]**

Wu X. * Bar-Sever Y. E. Folkner W. M. Williams J. G. Zumberge J. F.
Jupiter Icy Moons Tidal Signatures and Ocean Mapping from Orbit **[#9020]**

Sotin C. * Flokstra J.
Determining the Presence and Depth of an Ocean Within Europa, Ganymede and Callisto Using Gradiometers **[#9086]**

Anderson J. D. * Asmar S. W. Castillo J. C. Folkner W. M Konopliv A. S. Marouf E. A. Rappaport N. J. Schubert G. Spilker T. R. Tyler G. L. Watkins M. M. Yoder C. F.
Radio Science Concepts and Approaches for Jupiter Icy Moons Orbiter **[#9063]**

Stride S. L. McMaster R. L. * Pogorzelski R. J.
High Power mm-Wave Transmitter System for Radar or Telecomunications **[#9064]**

Turtle E. P. * Showman A. P.
The Importance of High-Resolution Topographic Data for Understanding Geologic Processes and Subsurface Properties of the Galilean Satellites **[#9065]**

Nimmo F. *
Measuring Europa's Shell Thickness and Surface Density Using JIMO-derived Gravity and Topography **[#9001]**

Madsen S. N. * Carsey F. D. Turtle E. P.
Fine Resolution Topographic Mapping of the Jovian Moons: A Ka-Band High Resolution Topographic Mapping Interferometric Synthetic Aperture Radar **[#9074]**

Khurana K. K. * Kivelson M. G. Russell C. T.
Dowsing for Water on Jupiter's Icy Satellites by Using a Magnetometer on JIMO **[#9009]**

Safaeinili A. * Rodriguez E. Edelstein W.
High-powered Radar Sounders for the Investigation of Jupiter's Icy Moons **[#9033]**

Lux J. P. * Perez R. M.
Lightweight, High-Power Radar with Distributed Signal Processing and Thermal Management **[#9021]**

Eluszkiewicz J. *
Assessing the Impact of Regolith Structure on the Detectability of an Ocean on Europa by a Sounding Radar **[#9038]**

Winebrenner D. P. *
Radar Sounding of Shallow Vertical Structure on the Icy Jovian Moons at Decimeter to Centimeter Wavelengths **[#9061]**

Rosen P. A. * Gurrola E. M. Madsen S. N.
Decimeter-Wavelength Polarimetric Radar Imaging of the Icy Moons of Jupiter **[#9071]**

McNutt R. L. Jr.*
Science and Payload Drivers for the Jupiter Icy Moons Orbiter (JIMO) **[#9015]**

Breakout Session on Atmospheric Science
Berkner Room E

Chairs: **A. P. Ingersoll**
A. A. Simon-Miller

Satellite Atmospheres

Smyth W. H. * Marconi M. L.
Science Objectives for Satellite Atmospheres, Their Circumplanetary Neutral Distributions, and Their Magnetospheric Impact and Interactions **[#9031]**

McGrath M. A. * Strobel D. F. Feldman P. D.
Icy Moon Atmospheres **[#9049]**

Hendrix A. R. * Esposito L. W. Pryor W. R. Stewart A. I. F. McClintock W. E. Hansen C. J.
An Ultraviolet Imaging Spectrograph for JIMO **[#9003]**

Showalter M. R. * Hamilton D. P. Burns J. A.
Jovian Ring Science Opportunities with the JIMO Mission **[#9027]**

Jupiter Atmosphere/Probes

Young R. E. * Spilker T. R.
Science Rationale for Jupiter Entry Probe as Part of JIMO **[#9004]**

Spilker T. R. * Young R. E.
JIMO Delivery and Support of a Jupiter Deep Entry Probe **[#9034]**

Orton G. S. * Yanamandra-Fisher P. A.
Investigation Options for Atmospheric Science Using Near- and Middle-Infrared Instrumentation **[#9029]**

Banfield D. Dissly R. * Butler B. Gierasch P.
Radar and Radiometry of Jupiter's Upper and Middle Troposphere **[#9055]**

Lebreton J.-P. * van der Heide E. J. Kruijff M.
Rotating Electrodynamic Tether System for a Low-Weight Jovian Atmospheric Probe **[#9017]**

THURSDAY, JUNE 12, 2003 (CONTINUED)

POSTER SESSION AND RECEPTION
6:00–8:00 p.m. Great Room

Astrobiology

Eicken H. Marion G. M. Deming J. W.
Salt Precipitation in the Europan Ice Shell and Its Potential Astrobiological Importance **[#9066]**

Remote Sensing: Geomorphology

Yanamandra-Fisher P. A.
Scattering and Optical Properties of Water Ice **[#9044]**

Figueredo P. H. Tanaka K. Senske D. Greeley R.
Geology of the Icy Galilean Satellites: Understanding Crustal Processes and Geologic Histories Through the JIMO Mission **[#9090]**

Surface Geophysics and Geochemistry

Lorenz R. D.
JIMO Propulsion System as an Ion Probe of Satellite Surfaces **[#9035]**

Dissly R. W. Miller K. L. Carlson R. J.
Artificial Crater Formation on Satellite Surfaces Using an Orbiting Railgun **[#9062]**

Interiors and Subsurface

Puschell J. J. Blasius K. R. Jack M. Silverman S. H. Schueler C. S. Greenfield M. J. Dykeman D. A. Wang J.
Multifunctional Active-Passive Millimeter Wavelength Imager-Sounder for the JIMO Mission **[#9069]**

Atmospheric Science

Retherford K. D. Gladstone G. R.
Prospects for FUV Remote Sensing of Io's Atmosphere and Magnetospheric Interaction with JIMO **[#9030]**

Chanover N. J. Glenar D. A. Simon-Miller A. A.
Jupiter Atmospheric Science with JIMO: Linking Science Objectives and Measurement Goals **[#9050]**

Simon-Miller A. A.
Atmospheric Science and the JIMO Mission **[#9024]**

FRIDAY, JUNE 13, 2003

7:30 a.m. Continental Breakfast in Great Room

PLENARY SESSION
8:00–8:40 a.m. Lecture Hall

Five-Minute Status Reports from Each Thematic Lead:

Chris McKay, *Astrobiology*

Louise Prockter, *Remote Sensing: Geomorphology*

Diana Blaney*, Remote Sensing: Geology and Geochemistry*

Nick Makris, *Surface Geophysics and Geochemistry*

Krishan Khurana, *Magnetospheres, Satellite Interactions, Atmospheres, Geophysics, and Geodes*y

David Stevenson, *Geophysics: Global and Interior Struc*ture

Don Blankenship, *Geophysics: Subsurface-Radar*

Andy Ingersoll, *Atmospheric Science*

CONCURRENT THEMATIC BREAKOUT SESSIONS
8:40 a.m.–3:00 p.m.

Breakout sessions meet in same locations as Thursday afternoon to formulate key objectives and priorities.

PLENARY SESSION
3:00–5:30 p.m. Lecture Hall

Thematic leads provide status reports from thematic breakout sessions
(10 minutes each plus 10 minutes for discussion).

Saturday, June 14, 2003

7:30 a.m. Continental Breakfast in Great Room

CONCURRENT THEMATIC SESSIONS
8:00–9:00 a.m.

Thematic groups separate into breakout rooms and tag up to ensure consensus within each group.

PLENARY SESSION
9:00 a.m.–Noon Lecture Hall

9:00–11:30 a.m.	Plenary Reports from Thematic Sessions (20 minutes each)
11:30 a.m.	Discussion
Noon	Forum Adjourns