University of California, Irvine, CA
September 7 - 10, 2017

MARS

20th Annual International Mars Society Convention

From Imagination
To Reality

THE MARS SOCIETY

Wednesday, September 6 (Pre-Convention Events)

6pm-7pm - Early Registration

University of California, Irvine

A311 Student Center

Irvine, CA92697

7pm-10pm - Steering Committee Meeting

(The first hour is open to the public)

University of California, Irvine

A311 Student Center

Woods Cove C

Irvine, CA 92697

Thursday, September 7

9:00am - Opening Plenary
Dr. Robert Zubrin - President, The Mars Society

9:30am - Plenary
Greg Benford - Author & Astrophysicist, UC Irvine

10:00am - Plenary
George Whitesides - CEO, Virgin Galactic

10:30am - Panel, Mars Architectural Design
Vera Mulyani - CEO, Mars City Design
MelodieYashar, Co-Founder, Space Exploration Architecture (SEArch+)

11:00am - Plenary
Loretta Hildalgo-Whitesides - Author & Consultant, Virgin Galactic

11:30am - Plenary
Scott Moreland - MSL & Mars 2020 Team, JPL

12:00pm - 1:00pm - Lunch Break

1:00pm - 5:00pm - Session Tracks:

	Technology Track 1	**Technology Track 2**	**Careers Track 1 BASE 11**	**Political/Philos Track 1**

1:00	**Morgan Irons;** The Deep Space Ecology Three-Zone Model: Results of Recent Experimentation with Ecological and Environmental Mechanisms and Demonstration of Key Concepts of Operation for Quasi-Closed Eco-Agricultural Systems	**Shyam Nair, Allen Frederick I. A., AbhisekBalasubramaniam;** Arachnidan 6 Wheeled All Terrain Explorer Equipped with a 7 DOF Robotic Arm	"Opening Space to Change the World for Good" **George Whitesides, CEO, Virgin Galactic**	**Bruce Cordell;** Spaceflight to M a Self-Organized Critical System
1:30	**James French;** Optical Mining - A New Approach to Obtaining Space Resources for Mars	**S. Bahram Sadighian;** Horizontal Takeoff and Landing to Low Earth Orbit	Panel Discussion: "Educating the Future Aerospace Workforce"; **Landon Taylor, CEO Base 11; Al Bunshaft, SVP Global Affairs, Americas, Dassault Systèmes; Noramay Cadena, Cofounder and Managing Director, Make in LA; Dennis Harkins, President, Orange Coast College; Maria Tirabassi, Engineering Vice President, Northrop Grumman Aerospace Systems; Gregory Washington, Stacey Nicholas Dean of Engineering, UCI; Jason Hatakeyama, Chief Architect & Sr Director Product Lifecycle Management,**	**Dr. Michael Waltemathe;** Ma Live in Interestin Times… Extrapo Historical Data o Societal and Rel Change Toward Exploration
2:00	**John E. Parks;** Look to the Sea: Applying Knowledge and Lessons from the Management of Earth's Oceans for Permanent Human Habitation on Mars	**Doug Plata;** The Moon: A Stepping Stone to Mars?		**James Heiser;** Civilizational Co and the Martian Frontier

			Boeing	
2:30	**T. Gordon Wasilewski;** Acquisition of Water from Western Utopia Planitia Subsurface: Theoretical Analysis of Sampling and Production Technologies	**Ted Ground;** "Step One", an Auspicious D-Type NEO Multiple Mission: Destination Deimos 2020	"Caltech/Base 11 Aerospace Mentorship Program: Learning by Experience," **David Huynh, Caltech and "WSU Innovation Campus: Creating Stronger Industry Partnerships through Applied Learning," John Tomblin, Wichita State University**	**Marvin Hilton;** Exploring Mars t Civilize Earth
3:00	**Thibault Paris;** Design and Building of a 3D Printed Pressurized Martian Spacesuit	**Kent Nebergall;**Near Term Space Settlement Risk Reduction Missions	"To Infinity and Beyond" **Jeremy Bout, The Edge Factor**	**Craig Davidson** NASA's Current Direction will Ne us to Mars
3:30	**Matthew Forir;** The Case for the use of Electrical Resistivity on Mars	**Art Harman;** Cis-Lunar? Why a Lunar Surface Base Will Get us to Mars - and a Lunar Orbital Station Won't	Aerospace Workforce Development Symposium Q&A and Closing Remarks	**Doug Plata;** Wh the Business Ca Mars Settlement
4:00	**Julian Zea;** A Self-Sufficient Mars Colony	**Craig Davidson;** Improving the SpaceX Mars Colonization Plans	Aerospace Workforce Development Expo	**Kent Nebergall** Space Developn Grand Challeng Vast Opportuniti
4:30	**Ronald Hattie,** The Cost per Pound to Orbit	**Craig Davidson;** The SharkFin Magnetic Sail		**Art Harman;** A Hope - Presiden Trump's Space

5:00pm - 7:00pm - Dinner Break

7:00pm - Panel
Sci Fi Greats - The Human Future in Space

Greg Benford
David Brin
Larry Niven
Jerry Pournelle

Greg Benford - Author & Astrophysicist, UC Irvine

Friday, September 8

9:00am - Plenary
Jaakko Karras - Engineer, New Technology, JPL

9:30am - Plenary
Dava Newman - Former Deputy Administrator, NASA

10:00am - Plenary
Paul Davies - Director, Beyond Center for Fundamental Concepts in Science

10:30am - Plenary
John Grotzinger - Former Project Scientist, MSL, NASA

11:00am - Plenary
Robert Pappallardo - Project Scientist, Europa Clipper, JPL

11:30am – Skype Session
Cast Members, Nat Geo MARS Series

12:00pm - 1:00pm - Lunch Break

1:00pm - 5:00pm - Session Tracks:

	Technology Track 3	**Technology Track 4**	**Medical Track 1**	**Outreach T**
1:00	**Anthony Muscatello;**Mars Atmospheric Capture and Processing	**Eric Robinson;** Green Launch	**Susan Jewell, Matteo Borri, Nicholas Jewell, Matthieu Komorowski, Sheryl Bishop,Emmy Jewell;** Developing Telesurgery-TeleanesthesiaProtocols, Integrating 3D Printing of Surgical Tools, and Testing Viability of 3D Virtual Reality Technologies During Simulation Training for Non-Medical Astronaut in a Mars Analog Environments	**Philippe Cl Richard He** Colonizatior Prospect to

1:30	**Miguel Cooper;** Human Exploration of Mars 2027-2056	**Thomas E. Markusic, PhD;** An Incremental Strategy for Mars Colonization Part I: Material Supply Fleet	**Joseph Clift;** Do Astronauts Dream of Catching Cosmic Sheep?	**Adam Lups** Martian to E Primer on U Storytelling Pitch Your S
2:00	**Marcus Anzengruber;** How Augmented and Virtual Reality eill get us to Mars and help Colonize the Planet	**Darrin Taylor;** Free Delivery with Your Order	**Dr. Jose Antonio Soto, MD;** MARS: Hikers Wanted	**Mary Turzil** Humanity's Vision
2:30	**Aswath Suresh, Sri Harsha, Vinay Teja, DebrupLaha, Gautam Ranjan, Shivam Bharadwaj, Dhruv Gaba;** Exploration-Probe to Jupiter Moon Europa	**Miguel Cooper;** The Path for a Human Mission to Mars: Target Year 2032	**Christoph Lahtz;** Space Biology is the Key to Establish Celestial Sustainable Human Settlements	**Yalda Mous** Collaboratio that Will Tak
3:00	**Aswath Suresh, Sri Harsha, Vinay Teja, DebrupLaha, Gautam Ranjan, Shivam Bharadwaj, Dhruv Gaba;**Innovative Human Mars Mission with Vertical Farming	**Joe Lingren, Kiva Villegas, Wesley Yu;** Low-Mass EDL Designs for Manned Mars Missions	**William Gardiner;** Better Martians, Better Humans: Will Genetic Therapy Allow Better Living on Both Mars and Earth	**Peter Dette Becker;** Tw Astronomica Observatori
3:30	**Dr. Joseph Parker;**Advanced Propulsion Systems for the Colonization of Mars	**Michael Bouchard;** The Coming Communication Crisis	**Bill Hargenrader, Jeff Pernell, Ron Sparkman;**Healthy Eating on Mars: Stepwise Local Approach to Whole-Foods (M:SLAW)	**Jan Millsap** How to Get to Mars
4:00	**George Lordos;**Evaluating the Sustainability of Long Term Manned Mars Campaigns Using a Physical Economics Framework	**Abigail Riggs;** The Use of Geophysical Techniques to Locate and Monitor Potential Martian Aquifers	**Dr. Ashish Gothwal;** A Prototype of Full-body Artificial Gravity Harness	**James Melt PhD;** Top 1 a Mars Mes
4:30	**Michał Hałon;** Mars Rover Design with SKA Robotics	**Mikolaj Owczarzak;** Augmented Reality and Telepresence Technologies in Future Mars Exploration Missions	**Dr. Ashish Gothwal;** Hypothesis: A New Era of Space Suits	**James Burl** Society Inte Force - Con Cyberspace

5:00pm - 7:00pm - Dinner Break

7:00pm - Debate
Does the Deep Space Gateway Have Merit?

8:00pm - Panel
Panel - The SpaceX Plan for Mars

9:00pm – Special Presentation
Mars in Film

Saturday, September 9

9:00am - Plenary
Carol Stoker - Planetary Scientist, Ames Center, NASA

9:30am - Plenary
Mike Elsperman - Space Science & Advanced Utilization, Boeing

10:00am - Plenary
Mars 160 Crew Presentation

10:30am - Skype Session
Dr. Mohammed Naser Al-Ahbabi, PhD. - Director-General, UAE Space Agency

11:00am - Panel
Social & Philosophical Implications

12:00pm - 1:00pm - Lunch Break

1:00pm - 5:00pm - Session Tracks:

	Technology Track 5	**Technology Track 6**	**STEM Track 1**	**Politi**
1:00	**Holger Isenberg;** Practical Color Calibration for Mars Surface Images	**Robert Madsen;** Virtual Reality - Simulating the Simulation	**Bob Barboza;** Occupy Mars Learning Adventures Fellowship Programs for Middle and High School Students	**Dr. M ElkeM** Motiva Explo Socio
1:30	**David Kutas, Alexis Koulidis, Monica Stancu;**Extraterrestrial Drilling Operations - A Fundamental Research	**Dan Gillies, Ryan Olcott;**Selective Laser Melting of MMS-1 and MMS-2 Martian Regolith Simulant in a Low Cost Testbed	**Nicholas, Jewell, Emmy Jewell, Susan Jewell, Mark Kaushal;**A 21st Century S.T.E.A.M.E.D™ Academy Creating Experiential Learning with Exponential Technologies Offering VR/AR Astronautic Programs and Fully Immersive "Real-time" Simulators for TrainingNextGen Analog Astronauts, Imagineers, and Astropreneurs	**Mohs** of Ma

2:00	**Garri RebattaUrquizo;** How Would it be to Construct with a 3D Printer?	**Gerald Black;**Nuclear Fusion: Clean, Safe and Cheap Energy and the Next Giant Leap in Space Propulsion	**Matthew Luttenberger;** M.A.R.S. University	**Brent** World Enterp Finan Centu
2:30	**Kurt Chankaya;** The Human Factor: Manned or Unmanned - Some Thoughts on Mission Resilience	**Matteo Borri;**Pneumatic Survey System for Martian Atmosphere	**Zach Whitten;**Whittenberg Country School Parallax Robots	**Dr. M** Right
3:00	**Kurt Chankaya;** The Use of Atmospheric in-situ Resources for Radiation Protection on the Surface of Mars	**Andrew Hallum;**Dive to Mars	**Ivo Georgiev;** MarsianSchool	**Amir Irene Mastr** Scale Learn
3:30	**Prasad Falke;** What Improvements to the Deep Space Network are Needed to Support Manned Missions to Mars?	**Art Harman;** Don't Destroy ISS in 2024 - Privatize it!	**Mark Cusimano, Steven Shields;** Mars Regolith Simulant as a STEM Education Resource	**Robe** A Priv Mars Leadi
4:00	**Kambiz Eqbal;** An Approach through "Energy Offering Methods" throughout the Human Establishment in the Martian Environment; Providing Feasible/ Most Efficient Scenarios to Every Operational Stage	**Art Harman;** Mars Flyby - Do it in the 2020s, not the 2030s	**Hoppe Jennings;** Mission to Mars: A way to teach middle school science.	**Dann** Ocea to the
4:30	PP **Edward Heisler;** The US Should End the Ban on NASA Working with China	**Vinod Sridhar;** Mars Electromagnetic Radiation Shielder(MERS)	PP **Henry Stirk;** Free Mars	**John** Expe

5:30pm - 6:00pm - Break

6:00pm - 11:00pm Mars Society Banquet

Song: Rise to Mars: Oscar Castellino

Banquet Speaker: Anousheh Ansari - First Female Private Space Explorer

Mars Society Awards Ceremony

Remarks by Dr. Robert Zubrin, Mars Society President

<u>Sunday, September 10</u>

9:00am - Plenary
Darlene Lim - Geobiologist, Ames Center, NASA

9:30am - Plenary
Geoffrey Landis - Author & Planetary Scientist, NASA

10:00am - Plenary
TBD - Lockheed Martin Mars Mission

10:30am - Plenary
The University Rover Challenge

11:00am- Plenary
The University Rover Challenge

11:30am - Closing Remarks
Dr. Robert Zubrin, President, The Mars Society