

**Extraterrestrial Materials
Analysis Group (ExMAG)**



Extraterrestrial Materials Analysis Group (ExMAG)

PAC meeting, November 2021

Barbara Cohen, Chair

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What is ExMAG?

- The Extraterrestrial Materials Assessment Group (ExMAG) is a NASA-chartered, community-based, interdisciplinary group providing a forum for discussion and analysis of matters concerning the collection, curation, and analysis of extraterrestrial samples, including planning future sample return missions.
- ExMAG also supports human exploration objectives and their implications for architecture planning and activity prioritization for future exploration of planetary surfaces insofar as they plan on collecting samples for return and analysis.
- Is this confusing? Come back tomorrow to hear Amy Mainzer, the chair of the Planetary Advisory Council (PAC), explain How NASA gets analysis and advice - the role of the PAC and AGs

Extraterrestrial Materials Analysis Group (ExMAG)

ExMAG membership

ExMAG STEERING COMMITTEE

ExMAG Chair
Barbara Cohen

Astromaterials Curator
Francis McCubbin

NASA HQ Liaison
Jeff Grossman

Chair:

Barbara Cohen (GSFC)

Members:

Jemma Davidson (ASU), Vice-Chair

Elizabeth Rampe (JSC), Secretary

Jessica Barnes (U of Arizona)

Justin Filiberto (LPI)

Jon Friedrich (Fordham)

Juliane Gross (Rutgers)

Pierre Haenecour (UA)

Lydia Hallis (U Glasgow)

Munir Humayun (FSU)

Hope Ishii (UH)

Rhiannon Mayne (TCU)

Larry Nittler (CIW)

Caroline Smith (NHM London)

Rhonda Stroud (NRL)

Allan Treiman (LPI)

Exploration Hardware Subcommittee

Space-exposed hardware collections, future hardware
Rhonda Stroud, acting

Facilities and Informatics Subcommittee

Sample curation facilities, databases, and catalogs
Pierre Haenecour
Rhiannon Mayne

Lunar Sample Subcommittee
Apollo samples, Artemis sample planning
Jessica Barnes

Mars Sample Subcommittee
MMX and Mars Sample Return planning
Justin Filiberto and Caroline Smith

Microparticle Subcommittee
Cosmic Dust, Stardust mission, microparticle impacts
Rhonda Stroud

Asteroid Subcommittee
Hayabusa, Hayabusa-2, OSIRIS-Rex
Munir Humayun

Meteorite Subcommittee
Antarctic meteorites
Jon Friedrich

Genesis Subcommittee
Genesis mission
Larry Nittler



ExMAG activities

- Website – <https://www.lpi.usra.edu/exmag/>
 - Check out out! Carried over CAPTEM meeting minutes and publications
- Membership
 - We will be recruiting for 2022 membership shortly
 - Secretary, at-large member, space-exposed hardware, lunar subcommittee
 - Targeted early-career opportunities
- Lunar Subcommittee
 - Analysis of best practices for additional Luna samples
 - Representation at LEAG for joint international sample efforts
- Meteorite Subcommittee
 - Met with NSF and ANSMET to understand when activities will resume in the Antarctic
- Mars Subcommittee
 - Setting up joint activities with MEPAG related to MSR planning and sample analysis needs
- Facilities and Informatics Subcommittee
 - Newly reconstituted; looking at upcoming needs
- Asteroid Subcommittee
 - Will be examining sample working plans for OREx when those plans are released



ExMAG activities

- Town Hall Virtual meeting, Feb. 25 2021
 - Introduction to new ExMAG structure and changes from CAPTEM, Community Q&A
- Spring Meeting Virtual, April 7-8 2021
 - Focused on curation and collections reports as per usual Spring CAPTEM meetings
 - NASA HQ briefing, New Frontiers 5 sample return mission language, Mars MSPG2 update
 - NASA JSC organizational and facilities reports
 - Astromaterials Curation & Allocation reports
 - Advanced Curation topics: ANGSA consortium model, Microbial ecology of Curation clean labs
 - Chang'e 5 sample return, Artemis curation planning, and Artemis III SDT
 - Findings briefed to PAC

Extraterrestrial Materials Analysis Group (ExMAG)



ExMAG Fall Meeting 2021

Time (EDT)	Time (PDT)	Thursday October 14
10:00 AM	7:00 AM	Early-Career event: Coffee with the ExMAG Chair
11:00 AM	8:00 AM	Welcome / HQ
11:30 AM	8:30 AM	Mars Sample Return updates
12:30 PM	9:30 AM	Sample Return Mission updates
1:30 PM	10:30 AM	---break---
1:45 PM	10:45 AM	Lunar Sample Science
4:00 PM	1:00 PM	Sample Acquisition and Handling Technologies
		Friday October 15
10:00 AM	7:00 AM	Facilities Posters
11:00 AM	8:00 AM	Laboratory facilities
11:30 AM	8:30 AM	Informatics
1:45 PM	10:45 AM	---break---
2:00 PM	11:00 AM	How NASA gets advice - PAC and AGs
2:15 PM	11:15 AM	Non-Antarctic Meteorite Recovery Efforts
4:15 PM	1:15 PM	ExMAG Findings and Discussion

- 241 people registered
- ~150 online at any given time
- Posters in Gather.Town
- Questions submitted anonymously and upvoted using Slido
- LPI support for AG virtual meetings is awesome on the front end, lacking in the execution



ExMAG Fall Meeting actions

- Regarding the NASA Data Ecosystem study, the recommendations only refer to DAP programs, with no mention of archiving of sample (e.g. meteorite, IDP) data. It seems that activity did not include lab / sample analysis people - how did this decision affect final report and recommendations? How can we ensure sample community is included in future NASA planetary data ecosystem discussions?
- Databases are meant to be able to be easily mined (see IRB recommendations) but are hampered by inconsistent jargon and terminology. How can we help address this issue? Lunar and Meteorite subcommittees can make recommendations on lunar meteorite nomenclature
- Read and comment on SPD-41: Scientific Information policy. How do we solicit feedback from the community?
- Further investigation of NASA's lab investments: How can funding for technical staff be considered as an integral part of supporting facilities in PMEF? How does NASA intend to support university/non-NASA labs?
- Review the ANSGA lessons learned and bring forward key messages. These lessons learned will be important not only for Artemis but possibly other SR missions. How well did the one-consortium model work for inclusivity, access, etc. and what recommendations could be made for ANSGA-2? How will ANSGA lessons learned be valuable for Artemis sample selection and analysis?
- Look into fireball networks in US and encourage better engagement with citizen scientists.



Re-amplifying Spring Meeting Finding

Chang'E-5 Sample Availability

- The successful Chang'E 5 mission has returned the first new lunar sample return in decades. The samples' source is a unique location, a young mare basalt far from previous collection sites, holding the potential to dramatically change our understanding of solar system volcanic and impact history. NASA-funded researchers have a strong interest in working with these samples but understand that their collaboration with the People's Republic of China (PRC) is constrained by the Wolf Amendment, a Congressional limitation prohibiting bilateral exchanges between NASA-funded scientists and scientists and institutions in the PRC. Science is an international effort that is hindered when individuals face barriers to fully participating in science because of national policies. While recognizing that the US State Department has flagged human rights issues in the PRC as an area of concern, a scientific exchange similar to that conducted by the US and Soviet Union on Luna and Apollo samples in the 1970s could encourage scientific knowledge exchange to foster openness and diplomacy. Under current policy, Chinese national scientists are disallowed from receiving Apollo sample loans from the US collection. **ExMAG encourages NASA to explore a path to permit sample exchange and reciprocal sample loans between NASA and CNSA for the Chang'E-5 and Apollo samples** specifically, and potentially to broaden such a program to encompass the substantial Antarctic meteorite collections of both nations and future sample-return missions. Such an exchange would also alleviate individual researchers' concerns about working with Chang'E-5 samples using NASA funding, which could constitute a violation of the Wolf Amendment. (*endorsed by LEAG*)