

# International Association for Obsidian Studies Bulletin

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IAOS Business Address: Michael A. Gottesman, IAOS Secretary-Treasurer, 4291 Arvada Street, Torrance, CA 90503

Bulletin assembled and edited by William J. McFarlane

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## NEWS AND INFORMATION



### NEW BY-LAWS NOW IN FORCE

The updated by-laws, sent to all members, have been passed and are now in force. Currently the IAOS has 91 individual voting members. Votes were received from 33. Thirty-one (31) votes were YES, one was NO and one had no entry.

Considering the usual 'turn-out' for political elections, this result augurs well for the continuing interest in the IAOS by our membership. Interestingly, thirteen (13) replies were by email while the remainder of 18 utilized the included postcards.

There are advantages to each voting method – email is convenient and fast while snail-mail can be anonymous (but most postcards had return addresses – only a total of 8 votes were anonymous).

My conclusion is that postcards are very effective and should be the primary voting method when voting for officers but to allow for email voting as an alternative. If there are other voting issues, perhaps email could or should be the primary means and use snailmail as the backup.

## Interim Membership & Financial Report

-We need new ideas

At the current time, the IAOS has a total of \$7620 and 96 members including Institutions. With a sample set of only two (2) newsletters under my belt, it would appear that the financial 'burn-rate' is about \$200/issue.

This means that we are in a very solid position financially, but our membership is staying very static – each year we add a few, lose a few. As an organization, is this what we want?

Further, it seems to me that the utilization and acceptance of obsidian sourcing and/or dating data in resolving archaeological problems is not increasing. If this is also true from your point-of-view, what – if anything – should the IAOS do about it?

Please send ideas or commentary and then these can become discussion points next April in Philadelphia (the SAA's – remember??).

- Mike Gottesman

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The IAOS will be offering two competitive funding opportunities to students. A \$500 stipend will be given to the organizer (or co-organizers) of a session at the next Society for American Archaeology meetings in New Orleans. The session topic is open to any aspect of obsidian studies, including but not limited to methodological and theoretical issues of sourcing and dating, exchange, production, or use of obsidian artifacts. Interested students should send a one page proposal to Michael Elam at [jme@utkux.utcc.utk.edu](mailto:jme@utkux.utcc.utk.edu) by July 1, 2000. The recipient of this stipend will also receive a one year IAOS membership.

A \$500 grant will also be offered by the IAOS during the next year. Students conducting research on any aspect of obsidian are eligible to apply. Please send a proposal no longer than one page in length to Michael Elam by November 1, 2000.

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## CALENDAR OF EVENTS

5-9 April 2000 - 65<sup>th</sup> Annual Meeting of the Society for

American Archaeology, Philadelphia.

19-22 April 2000- 34<sup>th</sup> Annual Meeting of the Society for

California Archaeology, Riverside, California.

*Get your events added to the calendar listings by dropping an e-mail note to the editor.*

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The International Association for Obsidian Studies has sponsored a forum at the 65th Annual Meeting of the Society for American Archaeology, Philadelphia. The forum will be held in Salon C between 8:00-11:00 AM, Sunday 9 April. The session is organized by Rissa M. Trachman and is entitled: Obsidian Studies in the Maya Region.

### Forum Abstract

Examining the organization of obsidian production has the potential to contribute to our understanding of Ancient Maya social, economic, and political organization. These considerations are often approached from three perspectives: 1) production and technology; 2) tool function; and 3) regional trade and exchange patterns. The papers in this session will outline these perspectives, and attempt to bridge them by identifying possible variables affecting different research areas across the Maya region. Data presented from recent investigations into procurement, distribution, technology, and consumption have the capacity to provide important insights into ancient Maya society.

### Individual paper abstracts:

Valdez, F.

Macroblade Unifaces from Sta. Leticia: Re-analyzing Function

The research focus of this paper centers on a re-analysis of obsidian macroblade artifacts from Sta. Leticia, El Salvador. The Sta. Leticia unifaces

were previously reported/described as "scrapers" based on morphological characteristics. This study conducted macro- and micro-wear analysis on each artifact as related to implied functional categorization. The results of the analysis, as well as comparative wear analysis interpretations for the unifacial artifacts are posited.

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Haines, H. R., K.A. Cox, and M.D. Glascock  
Old Stones, New Thoughts?: Interpreting the Obsidian Data from Blue Creek Ruin, Orange Walk District, Northwestern Belize

Situated on the Rio Bravo Escarpment in northwestern Belize, the Blue Creek Ruin was afforded both a stunning view of Belize's Coastal Plain and easy access to the navigatable Rios Bravo, Azul, and Hondo. If, as has been postulated, these were used as trade routes, these rivers provided the occupants of the Blue Creek area with passage to both the interior of the Peten and the coast as well as access to goods that were shipped between these and exotic regions. Concentrating on the obsidian discovered at numerous different locations in and around the Blue Creek Ruin, this paper is intended to serve two purposes: first, it adds to the growing database of information about obsidian use at sites in northwestern Belize, and second, it offers new methods of presenting and analyzing this material.

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Ford, A.

Specialization and Interdependencies: The Context of Obsidian Production in the Central Maya Lowlands

The evolution of ancient Maya civilization is founded on effective political management of the subsistence economy. With population growth and

centralization, there is increasing specialization within the economy. Initially specialization emerges in the essential household production sphere at the margins of the subsistence economy. With increasing interdependencies, specialization in the political economy evolves to integrate growing population. The obsidian production site in the Laton settlement area, of the Belize River Area, is an example of the development of specialization within the political economy of the Maya. The economic context is discussed in

comparison to essential household specialization, such as chert-tool production. It is argued that the distinctions are linked to the increasing interdependencies of the political economy.

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McFarlane, W., and M.-A. Canuto  
Analysis of the Lithics from Los Achiotos,  
Honduras: Considering a Preclassic Community

Analysis of the lithic assemblage from Los Achiotos, located near the Maya polity of Copan, Honduras has identified different modes of resource acquisition and distribution within this rural Preclassic community. Apart from traditional trade routes managed through Copan, Los Achiotos accessed a northern trade route through the Motagua Valley. Participation in this alternate independent interaction sphere promoted increased complexity within this rural community, leading to a rise of a local and autonomous elite class. Interestingly, the development of this center was cut short before the Classic period, roughly during the period of Ilopango's destruction and Copan's dynastic political ascension.

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McKillop, H, and T. Winemiller  
A GIS Approach to Spatial Analysis of Obsidian  
from Wild Cane Cay

Variability in the surface presence of obsidian at Wild Cane Cay was used as a gauge of activity areas. As a trading port, this exotic material was abundant, thereby providing a sizable sample for a quantitative study. Obsidian collected from 191 surface collection areas, each measuring 10 by 10 meters, was analyzed for evidence of ancient activities. The GIS, Integrator MGE, was used to examine surface variability. Variables include number, weight, CE/M index, blade width, and source, among others.

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Aoyama, K.  
Craft Specialization, Exchange, and Classic Maya  
Urbanism: Obsidian Evidence from the Copan  
Valley and the La Entrada Region, Honduras

This paper uses production and distribution patterns of 62,218 artifacts from the Copan Valley and the La Entrada region in Honduras to better understand the role of craft specialization and

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1999-2000

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|-------------------------|---|
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exchange in the development of Classic Maya state-level society. These artifacts pertain to the Early Preclassic (1400-900 B.C.) through the Early Postclassic Period (A.D. 900-1100) and can serve as a sensitive indicator for reconstructing one aspect of long-term changing patterns of the pre-Columbian Maya political and economic systems. I also discuss the implications of the present study for ancient Mesoamerican urbanism by examining the regional context of urban functions.

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Trachman, R.M.  
Early Classic Obsidian Core/Blade Production: An  
Example from the Site of Dos Hombres, Belize

The Program for Belize Archaeological Project's 1997 season produced a large collection of obsidian artifacts from an Early Classic tomb at the site of Dos Hombres, Belize. Although found in ritual context, a discussion of the types of artifacts present will demonstrate that the collection largely represents production debris. Evidence is also introduced for a previously unreported platform creation/rejuvenation technique, which involves initiating a break from a pecked or scored line forming the platform. The platform creation/rejuvenation technique resembles a method used in modern glass cutting to break glass rods. Broader implications are

addressed in order to put the ancient technique into social, political, and economic perspective.

Dreiss, M.L, D.O. Brown, and R. E. Hughes  
Obsidian Use in the Preclassic Period at the Site of Colha, Belize

Ninety-one obsidian samples from Preclassic proveniences at Colha, Belize were analyzed by XRF. Our results show significant temporal, spatial and contextual patterning of three Guatemalan obsidian sources. San Marti'n Jilotepeque obsidian is widely used in the Middle and Late Preclassic periods, but drops off in the Terminal Preclassic, with a concomitant rise in Ixtepeque and El Chayal use. Surprisingly, we find that San Marti'n Jilotepeque is more prevalent in domestic middens, El Chayal more prevalent in architectural and ceremonial contexts, and Ixtepeque more common in chert workshops.

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Braswell, G.E.: Discussion -- The Emergence of Market Economies in the Ancient Maya World: Obsidian Exchange in Terminal Classic Yucata'n, Mexico.

Clark, J. E.: Discussion

Hirth, K.: Discussion

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## ABSTRACTS AND ANNOTATIONS

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Anovitz, Lawrence, J. Michael Elam, Lee Riciputi, and David Cole

The Failure of Obsidian Hydration Dating: Sources, Implications, and New Directions. *Journal of Archaeological Science* 26:7, 735-752.

Obsidian hydration dating (OHD) originally

## Folk Uses of Obsidian

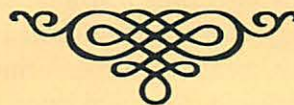
By Carleen Sanchez

### Talismans of the Southwest: Apache Tears

My First exposure to obsidian was as a little girl living in Southern Colorado. On the numerous camping trips taken with my family, it was common practice to search for Apache Tears- small river worn nodules of obsidian. These small stones were believed to have been the solidified tears of lament dropped by Apache women during the times when the US Army pursued a systematic program to round-up the Apaches for forcible containment on reservations. The Apaches fought long and hard to maintain their freedom, and were the last Native group to be subjugated. Apache tears, it was believed, served as a visible reminder of the anguish of the people.

Throughout the Southwest, Apache tears have been considered good luck charms, particularly to assuage any grief that might come to the owner. As a child, I remember scouring the ground around our camp sites in the hopes of finding the elusive treasure. Sadly, I never found one. But, for those, such as myself, unable to procure their own charm, trading posts and souvenir shops often stocked their own pile of obsidian treasure. So, for a nominal fee, a shield against bad luck could be purchased. More industrious merchants even attached Apache tears to key chains so they could be easily carried at all times.

For me, however, I was never convinced of the strength of a "store-bought" charm, its magic somehow diminished by its easy obtainability. The most potent amulets, it seemed, were those found in nature, those that called out to be found by a deserving seeker.



promised to be a rapid, inexpensive, simple and reliable method for dating obsidian artefacts. The perceived elegance of OHD resulted in rapid acceptance and widespread application despite question concerning its theoretical rigor. With increased usage it has become evident that, while economical, simple and fast, OHD is unreliable. Here results of a secondary ion mass spectrometry (SIMS) study of obsidian and synthetic glass artefacts are presented that explain why OHD has not lived up to expectations. The results suggest

that the standard OHD equations are inappropriate and that traditional optical measurements are inherently flawed. Although significant refinement will be needed, the results suggest that both chronological and palaeoclimatic data might be obtained from glass hydration rims through an improved analytical methodology and more rigorous treatment of the data.

Bonetti, R.<sup>(1)</sup>, P. Di Cesare<sup>(1)</sup>, A. Guglielmetti<sup>(1)</sup>, F. Malerba<sup>(1)</sup>, E. Migliorini<sup>(1)</sup>, M. Oddone<sup>(2)</sup>, J. R. Bird<sup>(3)</sup>, R. Torrence<sup>(4)</sup> & R. J. Bultitude<sup>(5)</sup> 1998.

Fission Track Dating of Obsidian Source Samples from the Willaumez Peninsula, Papua New Guinea and Eastern Australia. *Records of the Australian Museum* 50:277-284.

(1) Istituto di Fisica Generale Applicata dell'Universita' di Milano, Via Celoria, 16 20133 Milano, Italy. (2) Dipartimento di Chimica dell'Universita' di Pavia, Via Taramelli, 12 27100 Pavia, Italy. (3) Australian Nuclear Science and Technology Organization, Menai, NSW, 2234, Australia. (4) Division of Anthropology, The Australian Museum, 6 College Street, Sydney, NSW, 2000, Australia. (5) Department of Mines and Energy, 61 Mary Street, Brisbane, Queensland, 4000, Australia.

Obsidian samples from several outcrops in the Willaumez Peninsula region of Papua New Guinea and from eastern Australia have been dated by the fission track method for the first time. The Papua New Guinea samples yielded young ages (<sup>a</sup> 25 Ka), whereas dates of 85.5 Ma to 92.3 Ma were obtained for the Australian samples after using the plateau age and track size methods to correct for track fading. The Australian outcrops are among the oldest known obsidians in the world. The dates for the Papua New Guinea obsidian sources suggest that they may not have been available at the time of the first human colonisation of the region. The beginning of obsidian trade c. 20,000 years ago may be tied up with availability of resources rather than for cultural reasons.

Escola, P., H. Yacobaccio, M. Glascock and F. Pereyra

Identification of Archaeological Obsidian Sources in the Southern Puna (Argentina). Paper Presented at the Fourth World Archaeological Congress January 1999 Cape Town, South Africa.

Over the past two decades, the desert highlands of NW Argentina have been characterised by the presence of intensive prehistoric exchange networks. Nevertheless, archaeologists, following diverse lines of evidence, keep obsidian sources and exchange studies out of current research. The results provided in the present work represent the first step toward obsidian sourcing research in southern Puna. At least six obsidian sources have been localised in Catamarca and Salta provinces. Obsidian appears as small domes and lava flows associated with pumice, tephra and rhyolite, and like boulders in neighboring alluvial fans and talus cones. The geological context, geographical localisation, and petrographical characterisation are presented and discussed. In addition, chemical analyses by NAA and K/Ar datation were done. This study establishes an initial database for future obsidian provenance work in the Andean highlands.

Hawley, Marlin F. and Richard E. Hughes.

A source study of obsidian from the Infinity Site (14my305), Kansas. *Plains Anthropologist*, August 1999 v44 i169 p297 (9)

Three obsidian flakes were recovered from the multicomponent Infinity site (14MY305) in southeast Kansas. Two flakes large enough (>1 cm) for provenance analysis via x-ray fluorescence were manufactured from obsidian of the Malad, Idaho, chemical type. Over time, the flakes have come to be explicitly associated with the Middle Woodland Havana tradition Cuesta phase and have been used to link it, improbably, to the Hopewell Interaction Sphere. While a Cuesta phase association cannot be ruled out, other possibilities exist, especially an association with the site's Pomona variant component.

Hughes, Richard E. and Donna C. Roper. Source area analysis of obsidian flakes from a Lower Loup phase site in Nebraska. *Plains Anthropologist*, Feb

Non-destructive energy dispersive x-ray fluorescence analysis was applied to obsidian flakes from 25LP8, a Lower Loup phase site in Nebraska. All flakes have the same trace element composition as volcanic glasses of the Cerro del Medio chemical type, located in the Jemez Mountains of northern New Mexico.

King, Jerome (Pacific Legacy, Inc.)

Cultural Chronology and Settlement History of the Elk Hills. Paper presented at the 33<sup>rd</sup> Annual Meeting of the Society for California Archaeology, Sacramento, California.

While previous studies of the prehistory of the Buena Vista Basin have focused primarily on the prominent, well-known sites around the lakeshore, recent research at a number of sites on the former Naval Petroleum Reserve at Elk Hills has provided a broader perspective on the prehistory of the region. A comparatively large sample of both obsidian hydration measurements and radiocarbon dates also allows consideration of some technical problems with these chronometric methods. A new interpretation of obsidian hydration data indicates that the occupational decline or hiatus previously posited for the Basin beginning at about AD 1,000 is not apparent. Radiocarbon dates on freshwater mussel shell suggest that the use of this resource reached its peak between AD 1,100 and 1,300, a period that corresponds with the well-documented Medieval climatic anomaly. Despite the severe aridity of this interval, lakeshore and slough environments seem to have remained productive enough to permit intensive use of freshwater mussel, apparently as a fallback resource.

LaJeunesse, Roger (CSU Fresno) and John Pryor

A View of the Central Sierra from the Skyrocket Site. Paper presented at the 33<sup>rd</sup> Annual Meeting of the Society for California Archaeology, Sacramento, California.

This paper will discuss artifact assemblages from the Skyrocket site and their relationship to a number of regional chronologies, such as those developed for New Melones, Clarks Flat, and Yosemite. These comparisons necessarily involve a number of regional research questions, including, among others, the association between Pinto dart points and Western Stemmed Series; the definition of an Alta Thermal assemblage (ca. 7,000 to 5,000 BP); hydration rates for Bodie Hills obsidian; and changes in mortality and morbidity over the last 5,000 years.

Moholy-Nagy, Hattula  
Mexican Obsidian at Tikal, Guatemala. *Latin American Antiquity* Volume 10 Number 3  
September 1999

More than 1,200 artifacts from Tikal provide new information about the presence of Mexican obsidian in the Maya Lowlands and Teotihuacan's possible role in its transmission. In addition to the source of green obsidian near Pachuca, six other Mexican sources were identified in the Tikal sample. These artifacts date from the early Late Preclassic into the Early Postclassic periods. Over 96 percent are prismatic blades and thin bifaces, whose recovery contexts, spatial distributions, and signs of use wear indicate they were predominantly utilitarian and domestic artifacts used by all social groups. They were commodities that were transported over Highland-Lowland long-distance exchange networks of considerable time depth. This long-standing, interregional exchange of goods is essentially different from the relatively brief adoption and integration during the Early Classic period of objects, art styles, and behavior of Teotihuacan origin. Obsidian sequins and eccentrics of Teotihuacan style were material components of this latter phenomenon. Their forms and recovery contexts suggest use in rituals borrowed from Teotihuacan, but by lesser elites or wealthy commoners rather than by Tikal's rulers.

#### Resumen

Más de 1,200 artefactos de Tikal proporcionan nuevos datos acerca de la presencia de obsidiana mexicana en el área maya y el papel que Teotihuacan pudo haber tenido en su transmisión. Además de la fuente de obsidiana verde próxima a

Pachuca, Hidalgo, seis otras fuentes mexicanas aparecen en la muestra excavada en Tikal. Estos artefactos están fechados desde el período Preclásico Tardío temprano hasta el Postclásico Temprano. Más del 96 por ciento son navajas prismáticas y bifaciales, cuyos contextos, distribuciones espaciales, y huellas de uso indican que estos artefactos tenían funciones predominantemente utilitarias y domésticas y que eran utilizados por todos grupos sociales. Estos artefactos eran mercancías transportadas entre las Tierras Altas y Tierras Bajas por rutas de considerable antigüedad. Este intercambio interregional de larga duración de mercancías es esencialmente diferente al de la adopción e integración relativamente breve durante el Clásico Temprano de objetos, estilos de arte y comportamientos procedentes de Teotihuacán. Las placas y excéntricos de obsidiana de estilo teotihuacano eran partes de este fenómeno. No eran utilizados por los soberanos de Tikal, sino por las élites menores o por los plebeyos ricos. Sus formas y contextos sugieren su uso en ritos teotihuacanos, que no eran adoptados por las élites más

Smith, Craig S.

Obsidian use in Wyoming and the concept of curation. *Plains Anthropologist*, August 1999 v44 i169 p271 (2)

The concept of curation has been extensively used in studies of the organization of flaked stone tool technology. This concept incorporates a wide range of strategies and behaviors that mobile hunter-gatherers would have employed under disparate conditions. The quality and availability of raw materials is one factor influencing how mobile hunter-gatherers manufactured, used, and transported flaked stone implements. Because obsidian can be sourced to at least general locales, the examination of obsidian use in locations at various distances from its source provides a means of understanding the role of distribution of raw materials. The results of x-ray fluorescence sourcing of 179 specimens from 18 excavated sites in Wyoming and northern Colorado indicate that the most important sources were Obsidian Cliff, Bear Gulch, and Malad in eastern Idaho

and northwest Wyoming, located approximately 115 to 700 km from the excavated sites. It appears that mobile hunter-gatherers inhabiting the sites nearest the obsidian sources brought blanks from the source to the site for further reduction. By exchange with groups encountered during their annual movements, the occupants of sites farther from the sources obtained completed tools that they conserved and maintained as individuals' personal gear.

Sutton, Mark and Matthew Des Lauriers (CSU Bakersfield)

A Review of Obsidian Studies in the Southern San Joaquin Valley, California. Paper presented at the 33<sup>rd</sup> Annual Meeting of the Society for California Archaeology, Sacramento, California.

Over the last ten years, a number of sites in the southern San Joaquin Valley have yielded obsidian data. In this paper, these data are reviewed as to age, source, and geographic distribution. Several interesting patterns are beginning to emerge, including differential use of eastern California sources through time, an absence of northern California sources, and details of how obsidian material was utilized in technology.

Ambrose, S.H. (1998) Chronology of the Later Stone Age and Food production in East Africa. *Journal of Archaeological Science* 25: 377-392.

Scorzelli, R.B., Petrick, S., Rossi A.M., Poupeau G., Bellot-Gurlet L., et Bigazzi G., (1999) Mössbauer spectroscopy and electron spin resonance of Mediterranean obsidians for archaeological provenance identification, in: "Proceedings of the 6<sup>th</sup> Intern. Conference on Non-destructive Testing and Microanalysis for the Diagnostic and Conservation of the Cultural and Environmental Heritage", Rome, 17-20 mai, Euroma (Rome), vol. 3, 1893-1906.

Bartolomé E., Bellot-Gurlet L., Dorighel O., Poupeau G., Labrin E., et Yépez A. (1999) Origen de la obsidiana de dos sitios de la cultura La Tolita-Tumaco (Ecuador) determinado mediante caracterización doble por análisis PIXE y datación por trazas de fisión, in: "Actas do II Congresso Nacional de Arqueometria," 16-19 Setembro 1997 (Saragosse), Caesar Augusta 73, Institucion Fernando el Catolico, Saragosse, 289-299.

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## TRY SOME OHD - FREE

by Mike Gottesman

Over the past 4 years, UCLA has conducted a large number of obsidian dating projects using the Ambrose/Stevenson relative density/oh% method plus Trembour salt cells derived environmental data. We now have over 1300 dates from over 60 sites – the majority of which are from California (plus New Mexico, various Mayan sites, Mexico, and Argentina).

While the method must still be classified as experimental, the results are quite encouraging. It is my opinion that the resultant dates are within an archaeologically useful accuracy (i.e. beyond relative dating) often enough—and that most of the “incorrect” dates can be explained. This is not a “flavor-of-the-month” approach but rather it is another arrow in your how-old-is-it? quiver.

We would like to extend the range/type of dating projects to especially include sites with good alternative dating information AND particularly from those of you who have not tried this technique before.

So here’s the deal: If you have a project that is already completed – send me 10 samples of the parent obsidian from which hydration data is known. I will need the rind measurements, along with some basic information about the site from which to estimate relative humidity (RH) and the effective hydration temperature (EHT).

I will date these and send you an informal report. The only cost is that you send me at least an informal report on how the data fits in with prior conclusions, your opinion on the method, and whether or not you would consider it for future work. (I can also provide reference data, a “pro-forma” formal report and – after proper coordination – share data from other sites in your area of interest.)

Contact me at: [mgottesm@ucla.edu](mailto:mgottesm@ucla.edu)

## NEW IAOS MEMBERS

The following people have joined the IAOS since the last issue of the Bulletin:

Paul Amaroli, San Salvador, El Salvador  
Hyung-Tae Kang, National Research Institute of Cultural Property of Korea.  
Susan Maguire, SUNY-Buffalo

## ABOUT THE IAOS

The IAOS was established to:

1. develop standards for analytic procedures and ensure inter-laboratory comparability;
2. develop standards for recording and reporting obsidian hydration and characterization results;
3. provide technical support in the form of training and workshops for those wanting to develop their expertise in the field, and;
4. provide a central source of information regarding the advances in obsidian studies and the analytic capabilities of various laboratories and institutions.

## Membership

The IAOS needs membership to ensure success of the organization. To be included as a member and receive all of the benefits thereof, you may apply for membership in one of the following categories:

- Regular member \$20.00/year
- Institutional member \$50.00
- Student member \$10.00/year or free with submission of paper to newsletter and copy of current student identification
- Life-Time Member \$200.00



Regular members are individuals or institutions who are interested in obsidian studies, and wish to support the goals of the IAOS. Regular members will receive any general mailings; announcements of meetings, conferences, and symposia; bulletins; and papers distributed by the IAOS during the year. Regular members are entitled to attend and vote in Annual Meetings.

Institutional members are those individuals, facilities, and institutions who are active in obsidian studies and wish to participate in inter-laboratory comparisons and standardization. If an institution joins, all members of that institution are listed as IAOS members, although they will receive only one mailing per institution. Institutional members will receive assistance from, or be able to collaborate with, other institutional members. Institutional members are automatically on the Executive Board, and as such have greater influence on the goals and activities of the IAOS.

\*Membership fee may be reduced and/or waived in cases of financial hardship or difficulty in paying in foreign currency. Please complete the form and return to the Secretary-Treasurer with a short explanation regarding lack of payment.

\*\*Because membership fees are very low, the IAOS asks that all payments be made in US dollars in international money orders or checks payable on a bank with a US branch. If you do not do so, much of your dues are spent in currency exchange. If you wish to join us, mail a check or money order to the IAOS: Michael Gottesman, Secy-Treas., 4291 Arvada Street, Torrance CA 90503.

## CALL FOR ARTICLES AND INFORMATION

Submissions of articles, short reports, abstracts, or announcements for inclusion in the newsletter are always welcome. We accept electronic media on IBM-compatible diskettes in a variety of word-processing formats, but Word Perfect (up to 9.0) or Word 97 is preferred. A hard copy of the text and any figures should accompany diskettes. Send submissions to William J. McFarlane, SUNY-Buffalo, 380 MFAC, Ellicott Complex Amherst, NY 14261.

To send short contributions, discuss article ideas, or make suggestions, please get in touch by e-mail: [wjm1@acsu.buffalo.edu](mailto:wjm1@acsu.buffalo.edu)

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## Reminder!

Membership fees are due now. Please send a check or money order with membership form as soon as possible to Michael Gottesman.

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Yes, I'd like to renew my membership. A check or money order for the annual membership fee is enclosed (see below).

Yes, I'd like to become a member of IAOS. A check or money order for the annual membership fee is enclosed (see below). Please send my first issue of the IAOS Bulletin and a copy of the diskette-based (IBM PC-compatible) IAOS Obsidian Bibliography. Please check disk format required:  5 1/4 360 KB or  3 1/2 1.44 MB.

I am a student (copy of ID enclosed) and I am enclosing an abstract for a published obsidian related article or submitting a paper to the IAOS for printing in the Bulletin. Please enter my free membership. Please send the bibliography on  5 1/4 360 KB or  3 1/2 1.44 MB diskette.

Not convinced, but want to know more?

Please send me a complimentary issue of the latest IAOS Bulletin.

Please send me a copy of the IAOS Obsidian Bibliography ( 5 1/4 or  3 1/2) and a complimentary copy of the IAOS Bulletin. My check or money order for \$10 (refundable if I join IAOS this calendar year) is enclosed.

Name \_\_\_\_\_

Title \_\_\_\_\_

Street Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Country \_\_\_\_\_

Affiliation \_\_\_\_\_

Work Phone \_\_\_\_\_ FAX # \_\_\_\_\_

Home Phone (optional) \_\_\_\_\_

E-Mail Address(es) \_\_\_\_\_

My check or money order is enclosed for the following amount (please check one):

\$10 Student (submit ID)

\$20 Regular Member

\$50 Institutional Member

\$200 Lifetime Member

Please return this application to :

IAOS

M. Gottesman

4921 Arvada St.

Torrance, CA 90503-1413