



IAOS

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International Association for Obsidian Studies

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NEWS AND INFORMATION

IAOS Annual Meeting

The annual meeting of the IAOS will be held at the 2011 Society for American Archaeology meetings in Sacramento, California. The IAOS meeting will be Friday April 1 at 3.30-5pm. Please see your SAA program for meeting location.

CONSIDER PUBLISHING IN THE IAOS BULLETIN

The *Bulletin* is a twice-yearly publication that reaches a wide audience in the obsidian community. Please review your research notes and consider submitting an article, research update, news, or lab report for publication in the IAOS *Bulletin*. Articles and inquiries can be sent to cdillian@coastal.edu Thank you for your help and support!

IAOS Elections

We will hold electronic elections for President-Elect and Secretary-Treasurer in preparation for the 2011 IAOS Annual Meeting in Sacramento, CA. Candidate statements can be found on pages 6-7 of this *IAOS Bulletin*. Please email your vote to the current IAOS President, Tristan Carter at stringy@mcmaster.ca with "IAOS elections" in the subject line.

NOTES FROM THE PRESIDENT

Greetings once again, this time from the snowy tail-end of term, as we approach the holiday season and that small window of post-teaching research time before unadulterated consumerism kicks in. For the IAOS we are currently looking ahead to a range of 2011 activities, not least our yearly gathering at the annual meetings of the *Society for American Archaeology*, this time around in Sacramento, CA during March 30th – April 3rd. We are hoping to gather on Friday 1st April at 3.30-5pm for the actual IAOS meeting which we hope as many of you as possible will be able to attend; location to be announced in due course. This gathering offers us a chance to revisit the activities of the Society and plan for its productive future, not least through the announcement of the next president (for 2012-14) and our new treasurer/secretary. These important posts have four excellent candidates standing for election, namely Dr. Jeff Ferguson and Dr. Ellery Frahm for president, plus Kyle Freund and Adam Nazaroff for treasurer/secretary; you can read their personal statements here in the Bulletin and then cast your votes via email to me, at: stringy@mcmaster.ca

On Thursday March 31st we also have a symposium that will hopefully be of interest to you all, titled *The Cutting Edge: The State of Play in World Obsidian Studies*; this is an evening session (6-9pm) and we will let you all know the location as soon as the SAA has informed me. This panel is chaired by myself and is sponsored by both the IAOS and the *Society for Archaeological Sciences*; see the SAA preliminary program for details... should be something for everyone! In due course we also hope to have a gathering of some kind in Europe in the next couple of years, potentially to run another version of our SAA symposium, albeit potentially with more of an Old World spin. There are a variety of meetings at which we could have a presence, including the annual meetings of the

European Association of Archaeology, together with the 2012 bi-annual conference of the *International Symposium of Archaeometry* to be held in Liège, Belgium.

Next year we also hope to have some major updates on the IAOS website, specifically with regard to the bibliographic database that contains hundreds of references to studies worldwide on obsidian geo-chemistry, geochronology and sourcing. Craig Skinner has already begun this process, something that I hope to help with over the next few months with the aid of two of my McMaster University Research Assistants. In the meantime we would greatly appreciate it if any of our members alert us to their recent publications, either as a list of bibliographic references and / or a PDF of the papers themselves; these should be sent either to Craig (at skinnrc@peak.org), or me.

On a personal note, I enjoyed a wonderful summer out in the field collecting obsidian source samples in Turkey and Greece with a small group made up of two of my undergrads, Kyle Freund (a winner of the IAOS student poster competition at last year's SAA's), Daniel Contreras from Stanford, an expert in geo-archaeology and Peruvian obsidian, plus local collaborators from Van University in eastern Anatolia. It was in the latter region that we began our travails, including a nine hour romp around the rim of the magnificent caldera of Nemrut Dağ; wonderful views (see **image**), but lousy quality obsidian... We then travelled cross-country to Cappadocia, where the chances of being shot by local bandits diminished, access to local wine increased and we got to visit some of the prehistoric Eastern Mediterranean's most important source-based workshops at Kömürcü and Kayırlı on the Göllü Dağ massif, whose products were circulated through Anatolia, into Cyprus and down into the southern Levant. From there we continued eastwards and into the waters of the

Aegean, taking a James Bond-esque sea-taxi to the remote island of Giali, then wrapping up in the quarries of Melos, after which it was just a matter of dropping some major cash on excess baggage fees to get the samples back to the lab here in Hamilton.

The next stage of course is to analyze all these samples on my shiny Thermo Quant'X EDXRF in the McMaster Archaeological XRF Lab [MAX Lab] which is near-as-dammit operational, well once we get the green light from those lovely people at Health Canada... More on that in the next Bulletin where I am hoping to be able to share some of the results of our early work. Until then I wish you all a wonderful holiday season and hope that you all get some quality down time, perhaps even

research time, alongside those hours spent with great aunts and screaming children...

One final holiday treat, check out the all-too-important commentary on the use and abuse of pXRF in the latest *SAA Archaeological Record* by our own Steve Shackley...

All the very best,

Tristan Carter

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President IAOS

Assistant Professor, Dept. Anthropology,
McMaster University / Director MAX Lab



The caldera rim at Nemrut Dağ, Lake Van, Turkey. IAOS members L-R: Tristan Carter, Kyle Freund, Daniel Contreras and Kelly Brown

OBITUARY: Roger Curtis Green (1932-2009) Obsidian Studies Pioneer



Roger C. Green in the field in 1964

Overall obsidian studies are now realizing the potential that they appeared to hold when some of us began in the business some 30 years ago (Green 1998:232).

The realm of obsidian provenance and dating lost one of its founders, an IAOS Advisor, and one of my friends late last year. Roger C. Green was one of the first to recognize the utility of obsidian provenance research in both North America and Oceania (Green 1962, 1964; Green et al. 1967). Roger was born in Ridgewood, New Jersey, and his family moved to Albuquerque, New Mexico when he was 16 where he attended Albuquerque High School downtown. This move to New Mexico sparked his interest in archaeology, and during the summer between high school and becoming a freshman at the University of New Mexico, he worked in a number of archaeological sites under Frank Hibben in the Middle Rio Grande River Valley and the Largo-Gallina region of northern New Mexico (Green 1956). Roger completed coursework in geology and linguistics as well as anthropology at UNM, and subsequently was accepted to the graduate program in anthropology. He studied for a time under Edward Sapir and thought that he would work in linguistics, an early interest that became a factor in much of his archaeological research in Oceania. While in the Master's program at UNM he worked extensively in the Largo Gallina region of north central New Mexico following his adviser Hibben's earlier work (1938). His UNM advisors, including Hibben, recognizing his outstanding acumen in prehistory, suggested that he attend Harvard University where he studied under Gordon Willey and Cora du Bois. His first major publication was in *American Antiquity* in 1956 entitled "A Pit House of the Gallina Phase" and noted a number of obsidian artifacts; one scraper,

one "worked flake" and seven "unworked flakes" (1956:192). He returned to his Largo-Gallina research late in life during a School of American Research (SAR) summer fellowship in Santa Fe where I analyzed some of these and other obsidian artifacts (Shackley 1999). This was quite typical of his long-term interest in obsidian provenance.

Roger's interest in obsidian provenance studies began in earnest when he embarked on his doctoral research in Oceania focusing on the prehistoric sequence in the Auckland region (Green 1962, 1963; 1998). However, Roger noted that his original stimulus for using obsidian provenance to solve archaeological problems came from two UNM geology students he knew who used a refractive index on sites in northern New Mexico, the first obsidian provenance study in North America (Boyer and Robinson 1956; Green 1998; Shackley 2005). Perhaps best enumerated in his own words from his 1998 summary of obsidian studies:

When in 1958-59 I first seriously began to investigate the potential of volcanic glass studies for archaeology in New Zealand, and subsequently for the rest of Oceania, method and theory in the field was minimal. In the field of sourcing the initial stimulation was the New Mexican work of Boyer and Robinson (1956)...and my original attempts began with that technique, and with the aim of showing that not all New Zealand obsidian came from a single source on Mayor Island (Duff 1956:231). Shortly thereafter

I learned of Friedman and Smith's (1960) work on a new method of dating obsidian, and then through Graham Clark of an about to be published paper of Cann and Renfrew (1964) on more powerful methods (optical emission spectroscopy) of sourcing.

This lead [sic] to a series of papers (Green 1962, 1964, Green et al. 1967; Ambrose and Green 1962) which explored the potential of these techniques for some 12 source locations in New Zealand and in the early 1970s extended them to Oceania (Ambrose and Green 1972; Green 1991:202)... (Green 1998:224).

What I find most academically remarkable about Roger Green was that he was one of the first to recognize the utility of obsidian provenance and dating studies, and most importantly how they could be used in the service of understanding prehistory – not just to provide some provenance and dating data, but as the core from which more theoretically interesting ideas could be used to understand the past. Roger was always a great help to younger scholars. The story of our friendship could be repeated by many others around the world. In the 1990s, Roger contacted me when he was on one of his frequent trips to Berkeley in this case to visit his long-time colleague Pat Kirch. He suggested that it might be time to put together an SAA session on obsidian studies and I planned to do that at the 1993 St. Louis meetings. The session itself was rejected by

SAA as not of universal interest, but Roger encouraged me to develop a volume with the authors, which we did and published by Plenum Press (now Springer) under the Society for Archaeological Sciences in 1998 with Roger writing the discussion chapter cited above (Shackley 1998). His colleagues in the Department of Anthropology at the University of Auckland where he was a faculty member from 1961 until his retirement in 1992 characterize him as one of the most effective and kind colleagues.

There is much more one could say about Professor Roger Green. Much of what we do and think about obsidian provenance and dating can be directly linked to Roger's ideas over the last 40 years. He was recognized for his scholarship being awarded a Fellow in the U.S. National Academy of Sciences, Honorary Fellow in the Society of Antiquaries of London, and a Fellow in the Royal Society of New Zealand. In addition to teaching at Auckland, he taught for a while at the University of Hawaii, Manoa and held research positions at the Bishop Museum, Honolulu, and the American Museum of Natural History.

Science, archaeology, and archaeological obsidian studies have lost a giant in the field. Few have or will have such a lasting and important effect on obsidian research as Roger Green.

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M. Steven Shackley
Geoarchaeological XRF Laboratory
University of California, Berkeley

CANDIDATE STATEMENTS: IAOS President

Ellery Frahm, Ph.D., University of Minnesota

I am a research associate in Geology & Geophysics at the University of Minnesota, and I recently earned my Ph.D. in Anthropology. I have a M.S. in Interdisciplinary Archaeological Studies from Minnesota and a B.A. in Physics from Grinnell College. Working at the interfaces of these disciplines is exciting and fruitful.

I have been studying obsidian since 2002, when I placed a few obsidian specimens in an electron microprobe and was intrigued by the varied microcosms I found -- I was hooked. Since then, my principal analytical tool has been EPMA-WDS, and I also use data from NAA, various flavors of XRF, FT-IR, and magnetic techniques.

After finishing my Master's research on native copper sourcing under the guidance of George "Rip" Rapp, he handed me his collection of Anatolian obsidian specimens and directed me to "Do something great with them." The result was my dissertation on the Bronze-Age obsidian industry of Tell Mozan in northeastern Syria. For more on my work, including active projects on obsidian hydration and magnetism, please visit my website: <http://web.mac.com/elleryfrahm/>

From 2005 to 2009, I was a student representative on the Geological Society of America (GSA) Archaeological Geology Division management board, and from 2009 to 2010, I was co-chair of the SAA Geoarchaeology Interest Group. Last year, at GSA in Portland, I co-organized a session (Obsidian from Magma to Artifact) that brought together geologists and archaeologists who approach obsidian studies from diverse perspectives.

Traditionally IAOS has been associated chiefly with SAA. As President, one of my goals would be to increase the society's international visibility and membership in not only archaeological spheres but also geological ones, especially in such venues as GSA and Goldschmidt.

IAOS President candidate statements continued...

Jeffrey Ferguson, Ph.D., Missouri Research Reactor

I have been involved in obsidian compositional studies for more than 15 years, and I am currently a Research Assistant Professor in the Archaeometry Laboratory at the University of Missouri Research Reactor (MURR). While my own research has focused on compositional analysis for provenance studies, I contextualize this research in broader studies of lithic technology that include technological analysis and some hydration studies. Since joining MURR, my obsidian source characterization research has included sources in Western North America (California, Oregon, Colorado, New Mexico, and Arizona), Indonesia, and Eastern Africa (Kenya, Tanzania, Ethiopia), with the majority of my efforts focusing on New Mexico and the Rift Valley of Kenya. I have analyzed artifact assemblages from all over the United States, East Africa, the Philippines, and parts of Central and southern America. Much of this research has involved intensive collaborations with dozens of archaeologists and geologists. I am currently working to identify minor obsidian sources in western New Mexico and to understand how the use of small sources fits into large-scale procurement, and exchange patterns.

The IAOS serves an important, although, in my opinion, rather limited, role in world-wide obsidian studies. In recent years, the IAOS has focused on expanding membership, and these efforts, particularly those aimed at students, should continue. However, a professional organization's worth, and thus its value, to both current and prospective members, is based on the services and resources it provides. For example, I would like to expand the valuable efforts of Craig Skinner to include compositional data and perhaps even source sample exchange programs on the IAOS web site, creating a powerful resource for IAOS members. IAOS will continue to grow in both numbers and influence if we focus on providing useful research tools to our members and promoting the role of obsidian studies in archaeology.

CANDIDATE STATEMENTS: IAOS Secretary-Treasurer

Kyle Freund, McMaster University

Sound management is critical to the ongoing success of the International Association for Obsidian Studies (IAOS). I am a member of the association as a first year PhD student at McMaster University; my research focus is lithic analysis in the prehistoric Mediterranean, specifically by means of X-ray fluorescence (XRF) spectroscopy. As secretary/treasurer, I would be prepared to take on the responsibility of overseeing the budget, membership, and communications activities of the organization. I am qualified for this position having co-organized the 38th International Symposium on Archaeometry held this past May in Tampa, Florida. This experience taught me the nuances of organizing and corresponding with a large number of people from diverse backgrounds. Moreover, as an undergraduate at the University of Florida, I obtained a business minor which included taking several applicable courses related to business finance and accounting. I look forward to furnishing new ideas as to how IAOS can solidify its current standing and raise its profile in new venues, a topic which has been discussed in past meetings.

Adam Joseph Nazaroff, M.A., Stanford University

I am currently a second-year archaeology graduate student in the Department of Anthropology at Stanford University, and hold both a B.A. and M.A. in Anthropology from U.C. Berkeley and the University of New Mexico respectively. My current research focuses on a regional survey of chert sources in central Turkey with the goal of undertaking a chert sourcing project at the Neolithic site of Çatalhöyük, Turkey. Previously, I have taken part in obsidian sourcing studies in the American Southwest and have lead a large-scale obsidian provenance project in southern Belize. Moreover, I have strived to become an active participant in the discourse on the use of portable XRF technology in obsidian studies. Throughout my graduate career I have been intimately involved in University political organizations, holding a variety of positions including that of a Graduate Representative in Archaeology and as the President of a student-run anthropological organization. I am also currently a workshop organizer at Stanford University. The experience I have gained from these roles will directly aid me in being a contributing member of the IAOS organizational body through the Secretary-Treasurer position.

NEWS AND NOTES: Want to have your laboratory or research highlighted here? Send news or notes to the *Bulletin* editor at cdillian@coastal.edu with the subject line "IAOS news."

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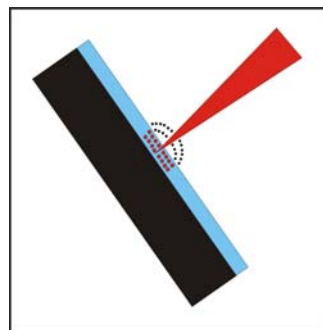
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XRF analysis is a useful method in both historic and prehistoric archaeology for the characterization of materials.

Geological origin or place of manufacture may be determined for materials such as volcanic rocks (e.g. rhyolite, basalt), prehistoric ceramics, historic earthenware, brick, glass, slate, or metals. Infrared spectroscopy is equally versatile and can be used to characterize inks, pigments, and residues. It is also the main instrumentation used in obsidian hydration dating. In short, these methods can provide critical information for the evaluation of hypotheses about past behavior.

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IRIDESCENT OBSIDIAN FROM THE ISLAND OF TENERIFE, CANARY ISLANDS, SPAIN

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Abstract

This paper will report the first documented occurrence of iridescent black obsidian of the Canary Islands, within the Pico de Teide National Park on the Island of Tenerife. Iridescence appears as a microthin layer which covers, partially or completely, the surfaces of obsidian blocks within intracaldera rhyolite flows that crop out on the slopes of the lava dome Montaña Rajada (2509 m). Results of thin sections and EDAX analysis of samples, completed at the Geological Survey of Austria in Vienna, determined the iridescence is caused by atmospheric alteration of obsidian due to changing temperature and humidity. Because this type of iridescent obsidian is not gem-quality, it cannot be used for production of jewellery such as snowflake obsidian, rainbow obsidian or fire obsidian.

Tenerife is the largest of the seven volcanic Canary Islands. Volcanic activity of this archipelago, located about 110 km offshore southwest of Morocco in the North Atlantic (Figure 1), started in Middle Miocene and continued with some interruption phases, similar to extreme southern La Palma Island (formally called San Miguel Island) raising the new volcano Teneguía (439 m) in 1971.

Briefly, the geologic development of Tenerife Island is characterized by the existence of a basic complex composed of supposed plutonic rocks, covering up to the Middle Miocene the approximately 1000 m thick layer with basalts, trachites and phonolites of the Cañadas series, forming the Pre-Teide-Massive which composes the largest area of Tenerife. In this context note that residual melts at the ends of lava tongues, lava tubes as well as along margins of lava flows in the mentioned Massive formed radial jointed basalt columns by all around solidification and shrinkage, which appear as numerous basaltic rosettes, the so called Basaltic Flowers. One of these is probably the most beautiful throughout the world (Exel 2009). The end of the Pre-Teide-Massive included the destruction of the central part of this large insular structure over a period of 1 million years, forming, after some collapse events between ca. 155000 - 200000 years ago, the 15 km wide Cañadas- Caldera. This Caldera is

preserved only in the south of the Teide Massive at elevations between 2000 to 2100 m and is bordered on the south by the Caldera Mountain Range with its highest peak Montaña de Guajara (2715 m).

The last stage was characterized by recent emissions of intracaldera volcanic rocks (serie IV) forming the big active stratovolcanoes Pico Viejo (3134 m) and Pico de Teide (3718 m) as well as the volcanoes Montaña Blanca (2750 m) and Montaña Rajada (2509 m) located east of the Pico de Teide (Figure 1). Both produced thick series of grey to yellowish colored pumice and finally numerous glass lava flows composed of obsidianic rhyolites, which covered the mentioned pumice (Araña 1989; Rothe 1996). The oldest of the flows reached ca. 4 km in length and covered large areas of the eastern Cañadas Caldera appearing as aa-lava. The last flows form relatively short tongues, appearing on the slopes of Montaña Blanca, where hot melt quickly solidified, conserving flow structures visible as laminations and folds and also preserving these structures in the similar flows, forming the lava dome Montaña Rajada.

While taking samples to find out parameters for the exact identification of obsidian outcropping in the Cañadas Caldera, particularly in the black obsidian-bearing rhyolitic flows on the western slope of the lava dome Montaña Rajada, I could observe black obsidian blocks in sizes of ca. 35 x

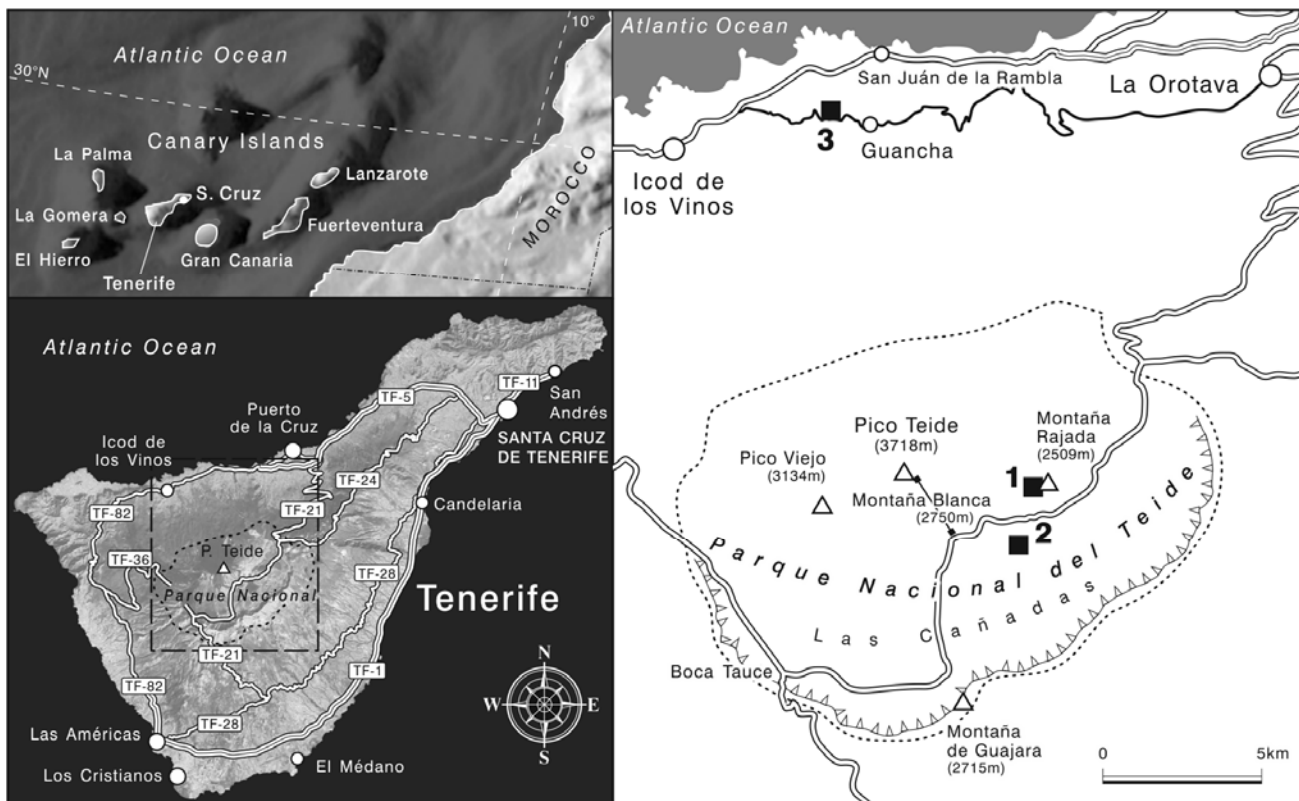


Figure 1. Sketch map of the Canary Islands. On the right map the obsidian occurrences are marked. 1 and 2: intracaldera obsidian-flows; 1 – Site with iridescent obsidian on the western slope of the lava dome Montaña Rajada; 2 – the mined site El Tabonal Negro. 3 – The mined site El Tabonal de los Guanches, outside de Cañadas caldera.

50 x 80 cm to more than 1,0 x 1,5 x 2,00 m with iridescent surfaces (Figure 2) like those appearing sometimes on ore minerals as chalcopyrite, antimonite, enargite and others. Being inside Teide National Park, such blocks could not be destructively sampled; only some small samples could be taken using a geologic hammer.

Thin sections and EDAX analysis of these samples were done in the laboratories of the Geological Survey of Austria in Vienna and showed only some inclusions of idiomorphic Ilmenite $[\text{FeTiO}_3]$ and small amounts of Mn. Therefore, in all probability, the genesis of iridescence, which covers partially or completely the surfaces of the black obsidian, is caused by atmospheric alteration of obsidian, due to changing temperature and humidity during insolation and heavy rainfall in summertime, as well as snow and freezing in wintertime, dissolving Fe und Mn. On the basis of these facts,

the iridescent obsidian in this discussion is not gem-quality such as snowflake obsidian, rainbow obsidian or fire obsidian.

I should like to point out that most of the black obsidian occurring in the intracaldera glass lava flows show to the naked eye 2-8 mm long white inclusions, which I could identify by thin section analysis to be idiomorphic plagioclases, twinned due to albite law. But there are also sites where the black obsidian occurs without inclusions, such as within a glass lava flow of the Montaña Blanca in locality El Tabonal Negro and within a glass lava flow outcropping on the northern slopes of Pico de Teide in locality El Tabonal de los Guanches (Figure 1). Both occurrences investigated by Hernández Gómez, Galván Santos and Barro Rois (1998) were mined occasionally in moderate scale by prehispanic Neolithic population invading the Canary Islands from North Africa presumably at the earliest about 1000 B.C., based on C^{14} - data

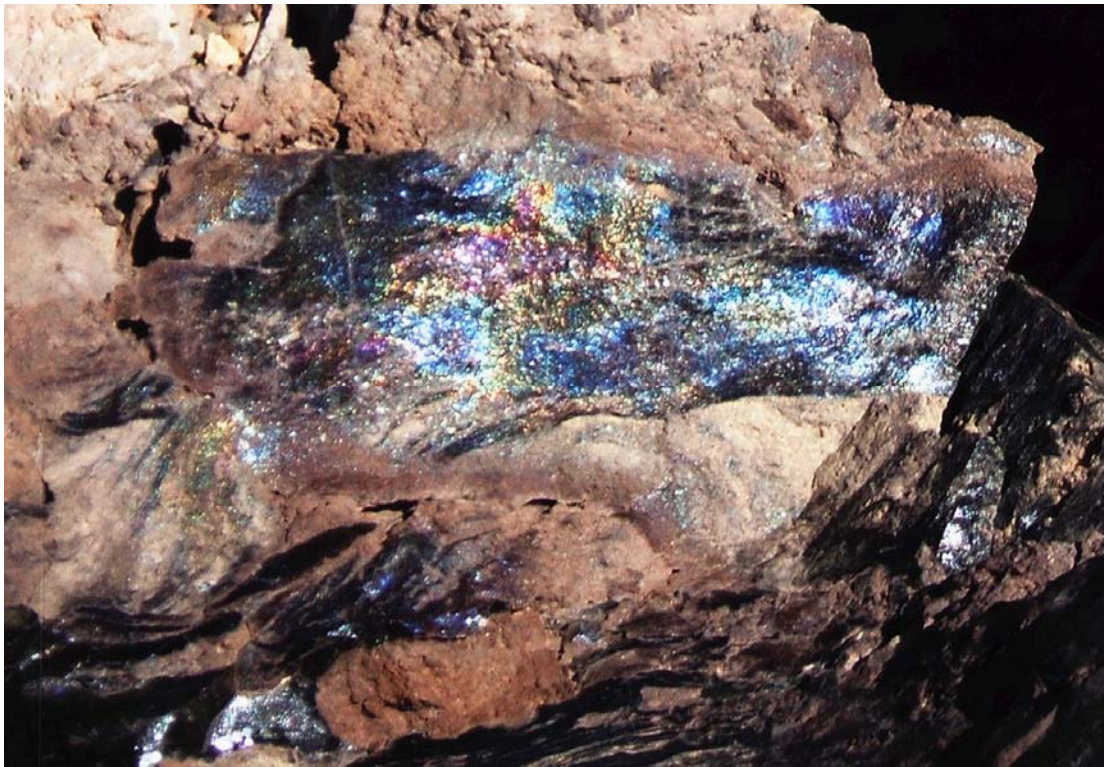


Figure 2. A block of black obsidian covered by a 35 cm large thin iridescent layer from the western slope of Montaña Rajada.

(see Mederos Martín and Escribano Cobo 2002: 44-48). This population developed a relatively primitive culture - not using a potter's wheel, plough, or bow and arrow when the Spanish conquered the Canary Islands between 1704 -1795 A.C. (Luis Concepción 2000; Mederos Martín and Escribano Cobo 2002).

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Acknowledgement

I want to thank very much my colleague Dr. Christoph Hauser, Innsbruck, for his useful advice.

ABOUT OUR WEB SITE

The IAOS maintains a website at <http://www.peak.org/obsidian/>. The site has some great resources available to the public, and our webmaster, Craig Skinner, continues to update the list of publications and must-have volumes.

You can now become a member online or renew your current IAOS membership using PayPal. Please take advantage of this opportunity to continue your support of the IAOS.

Other items on our website include:

- World obsidian source catalog
- Back issues of the *Bulletin*.
- An obsidian bibliography
- An obsidian laboratory directory
- Photos and maps of some source locations
- Links

Thanks to Craig Skinner for maintaining the website. Please check it out!

CALL FOR ARTICLES

Submissions of articles, short reports, abstracts, or announcements for inclusion in the *Bulletin* are always welcome. We accept electronic media on CD in MS Word. Tables should be submitted as Excel files and images as .jpg files. Please use the *American Antiquity* style guide (available at www.saa.org/publications/StyleGuide/styFrame.html) for formatting references and bibliographies.

Submissions can also be emailed to the *Bulletin* at cdillian@coastal.edu. Please include the phrase "IAOS Bulletin" in the subject line. An acknowledgement email will be sent in reply, so if you do not hear from us, please email again and inquire.

Deadline for Issue #45 is May 1, 2011.

Send submissions to:

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Inquiries, suggestions, and comments about the *Bulletin* can be sent to cdillian@coastal.edu. Please send updated address information to Colby Phillips at colbyp@u.washington.edu.

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/year*

Student Member: \$10/year or FREE with submission of a paper to the *Bulletin* for publication. Please provide copy of current student identification.

Lifetime Member: \$200

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

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

NOTE: Because membership fees are very low, the IAOS asks that all payments be made in U.S. Dollars, in international money orders, or checks payable on a bank with a U.S. branch. Otherwise, please use PayPal on our website to pay with a credit card. <http://www.peak.org/obsidian/>

For more information about the IAOS, contact our Secretary-Treasurer:

Colby Phillips
IAOS
c/o University of Washington
Department of Anthropology
Box 353100
Seattle, WA 98195-3100
U.S.A.
colbyp@u.washington.edu

Membership inquiries, address changes, or payment questions can also be emailed to colbyp@u.washington.edu

ABOUT THE IAOS

The International Association for Obsidian Studies (IAOS) was formed in 1989 to provide a forum for obsidian researchers throughout the world. Major interest areas include: obsidian hydration dating, obsidian and materials characterization ("sourcing"), geoarchaeological obsidian studies, obsidian and lithic technology, and the prehistoric procurement and utilization of obsidian. In addition to disseminating information about advances in obsidian research to archaeologists and other interested parties, the IAOS was also 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
4. Provide a central source of information regarding the advances in obsidian studies and the analytic capabilities of various laboratories and institutions.

MEMBERSHIP RENEWAL FORM

We hope you will continue your membership. Please complete the renewal form below.

NOTE: You can now renew your IAOS membership online! Please go to the IAOS website at <http://www.peak.org/obsidian/> and check it out! Please note that due to changes in the membership calendar, your renewal will be for the next calendar year. Unless you specify, the *Bulletin* will be sent to you as a link to a .pdf available on the IAOS website.

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 new member of the IAOS. A check or money order for the annual membership fee is enclosed (see below). Please send my first issue of the IAOS *Bulletin*.

Yes, I'd like to become a student member of the IAOS. I have enclosed either an obsidian-related article for publication in the IAOS *Bulletin* or an abstract of such an article published elsewhere. I have also enclosed a copy of my current student ID. Please send my first issue of the IAOS *Bulletin*.

NAME: _____

TITLE: _____ AFFILIATION: _____

STREET ADDRESS: _____

CITY, STATE, ZIP: _____

COUNTRY: _____

WORK PHONE: _____ FAX: _____

HOME PHONE (OPTIONAL): _____

EMAIL ADDRESS: _____

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

\$20 Regular

\$10 Student (include copy of student ID)

FREE Student (include copy of article for *Bulletin* and student ID)

\$200 Lifetime

Please return this form with payment to:

Colby Phillips

IAOS

c/o University of Washington

Department of Anthropology

Box 353100

Seattle, WA 98195-3100

U.S.A.