

Article Views

- > **Abstract**
- > References
- > Full Text (PDF)

Article Tools

- > Save to My Folders
- > Download Citation
- > Alert Me When Article is Cited
- > Post to CiteULike
- > E-mail This Page
- > Submit an E-Letter
- > Commercial Reprints and Permissions
- > View PubMed Citation

Related Content

- > Load related web site information

Science 12 July 1996:
 Vol. 273 no. 5272 pp. 223-225
 DOI: 10.1126/science.273.5272.223

[< Prev](#) | [Table of Contents](#) | [Next >](#)

[To Advertise](#) | [Find Products](#)

REPORT

Maya Blue Paint: An Ancient Nanostructured Material

M. José-Yacamán^{*}, Luis Rendón, J. Arenas, Mari Carmen Serra Puche

M. José-Yacamán and L. Rendón, Instituto de Física, Universidad Nacional Autónoma de México, Apdo. Postal 20-364, Delegación Alvaro Obregón, 01000 México, D.F., México.

J. Arenas, Instituto Nacional de Investigaciones Nucleares, Carr. México-Toluca Km. 36.5, 52045 Salazar Edo. de México.

M. C. Serra Puche, Museo Nacional de Antropología, Instituto Nacional de Antropología e Historia, Paseo de la Reforma y Gandhi s/n, Polanco, 11560 México, D.F., México.

^{*} To whom correspondence should be addressed. E-mail: yacamán{at}sysul1.ifisicacu.unam.mx

ABSTRACT

Maya blue paint was often used in Mesoamerica. The origin of its color and its resistance to acids and biocorrosion have not been fully understood. High-resolution transmission electron microscopy, electron energy loss spectroscopy, and x-ray microanalysis studies of authentic samples show that palygorskite crystals in the paint form a superlattice that probably occurs as a result of mixing with indigo molecules. An amorphous silicate substrate contains inclusions of metal nanoparticles encapsulated in the substrate and oxide nanoparticles on the surface. The beautiful tone of the color is obtained only when both the particles and the superlattice are present.

Similar Articles In:

- > [Science Magazine](#)

Science. ISSN 0036-8075 (print), 1095-9203 (online)

[News](#) | [Science Journals](#) | [Careers](#) | [Blogs and Communities](#) | [Multimedia](#) | [Collections](#) | [Help](#) | [Site Map](#) | [RSS](#)
[Subscribe](#) | [Feedback](#) | [Privacy / Legal](#) | [About Us](#) | [Advertise With Us](#) | [Contact Us](#)

© 2011 American Association for the Advancement of Science. All Rights Reserved.
 AAAS is a partner of [HINARI](#), [AGORA](#), [OARE](#), [eFL](#), [PatientInform](#), [CrossRef](#), and [COUNTER](#).

Search Google Scholar for:

- > Articles by José-Yacamán, M.
- > Articles by Puche, M. C. S.

Search PubMed for:

- > Articles by José-Yacamán, M.
- > Articles by Puche, M. C. S.

Find Citing Articles in:

- > [Web of Science](#)

> Load citing article information

> CrossRef

> Google Scholar

> Citing articles via Scopus

My Science

> My Folders

> My Alerts

> My Saved Searches

> Sign In