



# Clast shape-fabric analysis: A comprehensive and efficient methodology to measure particle-orientation data in solid and loose volcanoclastic deposits <sup>☆,☆☆</sup>

L.A. Rodríguez-Sedano <sup>a</sup>, D. Sarocchi <sup>b,\*</sup>, F. Castillo Rivera <sup>a</sup>, G. Moreno-Chávez <sup>c</sup>,  
M.F. Cerca-Ruiz <sup>b</sup>, J.A. Montenegro-Ríos <sup>b</sup>

<sup>a</sup> CONAHCYT-Instituto de Geología, Universidad Autónoma de San Luis Potosí, Av. Dr. M. Nava No 5 Zona Universitaria, San Luis Potosí 78240, México

<sup>b</sup> Instituto de Geología/Facultad de Ingeniería-UASLP, San Luis Potosí 78240, México

<sup>c</sup> Maestría en Ciencias del Procesamiento de la Información, Universidad Autónoma de Zacatecas, Av. Ramón López Velarde 801, Zacatecas 98000, México

## ARTICLE INFO

**Method name:**  
Shape-Fabric method

**Keywords:**  
Clast shape-fabric  
Particle orientation  
Quantitative textural analysis  
Vulcanology

## ABSTRACT

Fabric analysis is essential for understanding the evolution of volcanoclastic deposits. Here we present a comprehensive and efficient methodology, called “Clast shape-fabric analysis,” which is part of the Quantitative Textural Analysis (QTA). This methodology combines high-resolution image analysis techniques with geospatial data processing tools.

The fabric of a deposit refers to the three-dimensional orientation of the particles with respect to space, where the degree of iso-orientation of the major axes of the particles is taken into account. The process begins with the collection of oriented samples in the field. Then, in the laboratory, the samples are processed to obtain high-resolution images. The final stage involves the analysis of these images using the FabricS program, which combines image processing techniques and circular statistics.

An application of the method was made at the Joya Honda Maar in Mexico, where shape-fabric analysis was used to identify the emission centers of pyroclastic materials.

In summary, the “Clast shape-fabric analysis” is a reliable, low-cost and high-potential methodology that can be applied in several geoscientific disciplines and other areas of scientific research.

- New Methodology for shape-fabric analysis is presented.
- The methodology involves field work, laboratory work and image analysis.
- Identification of particle orientations in volcanoclastic deposits.

### ☆ Related research article

☆☆ *For a published article:* G. Moreno Chávez, F. Castillo Rivera, D. Sarocchi, L. Borselli, L.A. Rodríguez-Sedano. FabricS: A user-friendly, complete and robust software for particle shape-fabric analysis. *Comput. Geosci.* 115 (2018), 20-30. [10.1016/j.cageo.2018.02.005](https://doi.org/10.1016/j.cageo.2018.02.005)

\* Corresponding author.

*E-mail address:* [damiano.sarocchi@uaslp.mx](mailto:damiano.sarocchi@uaslp.mx) (D. Sarocchi).

<https://doi.org/10.1016/j.mex.2023.102519>

Received 17 October 2023; Accepted 11 December 2023

Available online 13 December 2023

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