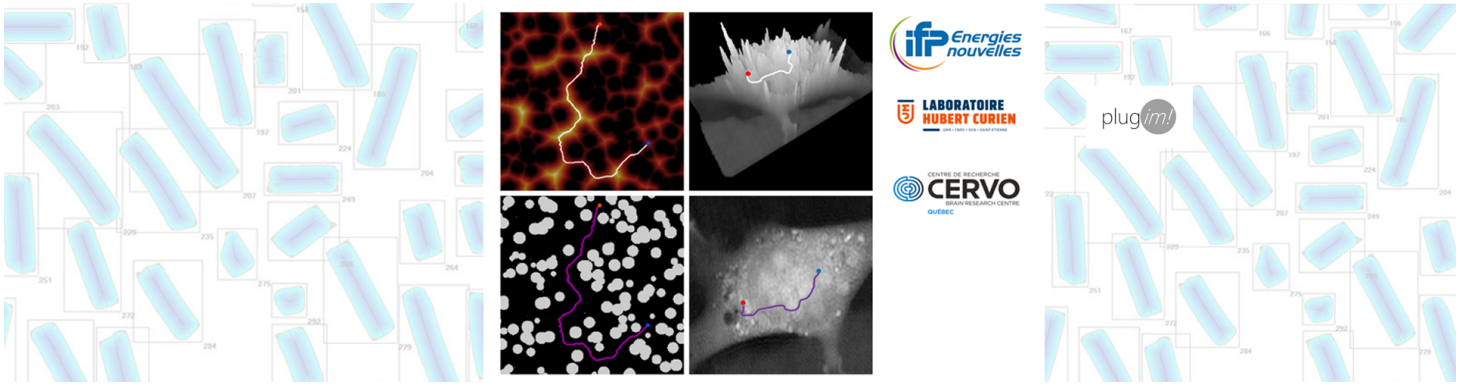


Written on 19 December 2019 2 minutes of reading

News

Fundamental Research

Geosciences | Petrophysics and transfers in porous media | Analysis and characterization | Structural analysis and Imaging | Mathematics and IT | Signal processing/Data science

IFP Energies nouvelles has developed new morphological descriptors for porous networks. The result of work carried out in partnership by two of its research divisions, they are hinged around the concepts of accessibility and tortuosity to describe paths within a material.

Descriptors accessible on the plug *im!* platform

These morphological descriptors provide a global and local description of the internal networks of a microstructure and indicate the maximum size of a “probe particle” capable of moving through them. A function that is contained in a new module now freely available on the plug *im!* platform.

This research was carried out within the framework of a PhD thesis [1] conducted in partnership with the Laboratoire Hubert Curien (UMR CNRS 5516) and gave rise to a first paper [2].

Towards new fields of application

The partnership established during the project with Laval University’s CERVO brain research laboratory in Quebec also enabled the PhD student to spend a 3 months scientific stay there. During

his time, he was able to extend the field of application of these new tortuosity descriptors, now capable of characterizing the textures of living cells.

Heralding potential future transpositions, this extension fits squarely with IFPEN's outward-looking approach to fundamental research and will lead to the publication of a specific paper.

Scientific contact: Maxime Moreaud

[1] J. Chaniot, 2019. *Caractérisation morphologique et topologique efficace de matériaux par cartes de distances.* Thèse soutenue le 2 octobre 2019, Université Jean Monnet Saint Etienne.

[2] J. Chaniot, M. Moreaud, L. Sorbier, T. Fournel, J.M. Becker. *Tortuosimetric operator for complex porous media characterization. Image Analysis and Stereology* 38(1), p. 25-41 (2019).

> To find out more: plug *im!* software platform

YOU MAY ALSO BE INTERESTED IN

Integration of deep learning in IFPEN projects
Signal and Image processing: IFPEN launches the first open access platform designed for non-signal processing experts
New porous microstructure descriptors based on tortuosity and accessibility
19 December 2019

Link to the web page :