



### Science Arts & Métiers (SAM)

is an open access repository that collects the work of Arts et Métiers Institute of Technology researchers and makes it freely available over the web where possible.

This is an author-deposited version published in: <https://sam.ensam.eu>  
Handle ID: <http://hdl.handle.net/10985/9978>

#### To cite this version :

Antonio RODRIGUEZ DE CASTRO, Guillaume MALVAULT, Azita AHMADI-SENICHAULT, Abdelhak AMBARI, Denis BRUNEAU, Stephane CHAMPMARTIN, Aziz OMARI - On the Determination of Pore size distribution from Injection of yield stress fluids through model porous media - 2012

Any correspondence concerning this service should be sent to the repository

Administrator : [scienceouverte@ensam.eu](mailto:scienceouverte@ensam.eu)



## On the Determination of Pore size distribution from Injection of yield stress fluids through model porous media

Rodriguez<sup>1</sup>, A., Malvault<sup>2</sup>, G. Ahmadi<sup>1</sup>, A., Ambari<sup>2</sup>, A., Bruneau<sup>1</sup>, D., Champmartin<sup>2</sup>, S. and Omari<sup>1</sup>, A.

<sup>1</sup>*I2M, UMR CNRS 5295, Arts et Metiers ParisTech, Univ. Bordeaux, F-33400 Talence, France.*

<sup>2</sup>*LAMPA, Arts et Métiers ParisTech, CER Angers, 2 blv du Ronceray, 49035 Angers, France*

**ABSTRACT:** Current methods used to determine pore size distribution of porous media (as mercury porosimetry) present several drawbacks the main of which is their toxicity. An innovative method using yield stress fluids has been proposed in the literature. The main idea in these works is that using fluids with a threshold below which the fluid does not flow allows obtaining the pore size distribution by simply measuring the evolution of the flow rate versus pressure gradient. In fact this attractive method should be carefully handled and very precise experimental results are needed to make the method tractable in order to meet the targeted objective. This will be discussed through presentation of our recent experimental results. In these experiments two kinds of fluids were specifically formulated and rheologically characterized. These fluids were injected in both simple and complex artificial porous media and flow rate-pressure gradient relationships were established allowing us to estimate the pore size distribution.