

Abstract Submitted  
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**Rheological Fluids under Perturbation: Reconstruction and Relaxation Processes**<sup>1</sup> ELSA MARIA DE LA CALLEJA<sup>2</sup>, Universidad Autonoma de Puebla, JOSE LUIS CARRILLO<sup>3</sup>, Universidad Autonoma de Puebla — We study the evolution of the structure of electro rheological as well as magneto rheological fluids in the presence of perturbation fields. We have previously shown that the fibrous structure acquired by these dispersions in the presence of a static, electric or magnetic, field has multifractal characteristics[1]. If in addition to the static field a perpendicular pulsed field is applied, under certain conditions it is possible to rearrange the structure into an ordered one[2]. Based on the measured mass fractal dimension and the radial distribution of mass, we discuss these processes and other structural characteristics of the system approaching these phenomena as a glass transition. [1] J. L. Carrillo, F. Donado, and M. E. Mendoza: Fractal patterns, cluster dynamics, and elastic properties. Phys. Rev. E 68, 061509 (2003); J. L. Carrillo, M. E. Mendoza, and F. Donado: Fractal patterns and aggregation processes in rheological dispersions. J. Stat. Mech. P06001 (2005). [2] J. L. Carrillo, E. M. De la Calleja, M. E. Mendoza, and F. Donado, Ferroelectrics (in press).

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