

# High magnetization nanocomposite magnetic fluid: structure, magnetorheology and new sealing mechanism in rotating seals

Daniela Susan-Resiga<sup>1,4</sup>, Vlad-Mircea Socoliuc<sup>1,3\*</sup>, István Borbáth<sup>2</sup>, Tünde Borbáth<sup>2</sup>, Septimiu Casian Tripon<sup>5,6</sup>, Florica Bălănean<sup>1</sup>, Ladislau Vékás<sup>1,3\*\*</sup>

<sup>1</sup>Romanian Academy – Timisoara Branch, Center for Fundamental and Advanced Technical Research, Laboratory for Magnetic Fluids, Blvd. Mihai Viteazu, No. 24, 300223, Timisoara, Romania

<sup>2</sup>ROSEAL Co., Str.: Nicolae Bălcescu, Nr.: 5/A, Odorheiu Secuiesc, Romania

<sup>3</sup>Politehnica University of Timisoara, Research Center for Complex Fluids Systems Engineering,  
Mihai Viteazul Ave. 1, 300222 Timisoara, Romania

<sup>4</sup>West University of Timisoara, Faculty of Physics, Vasile Parvan Str. 1, 300222 Timisoara, Romania

<sup>5</sup> Institute for Research and Development of Isotopic and Molecular Technologies,  
Integrated Laboratory of Electron Microscopy, 400293 Cluj-Napoca, Romania

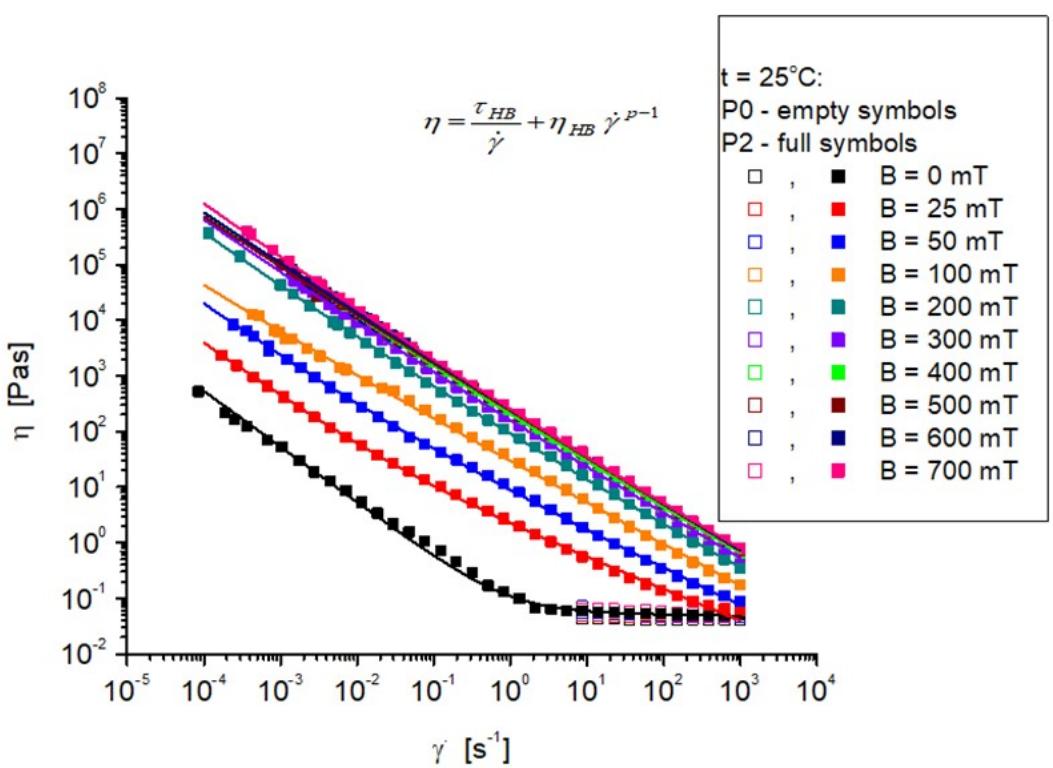
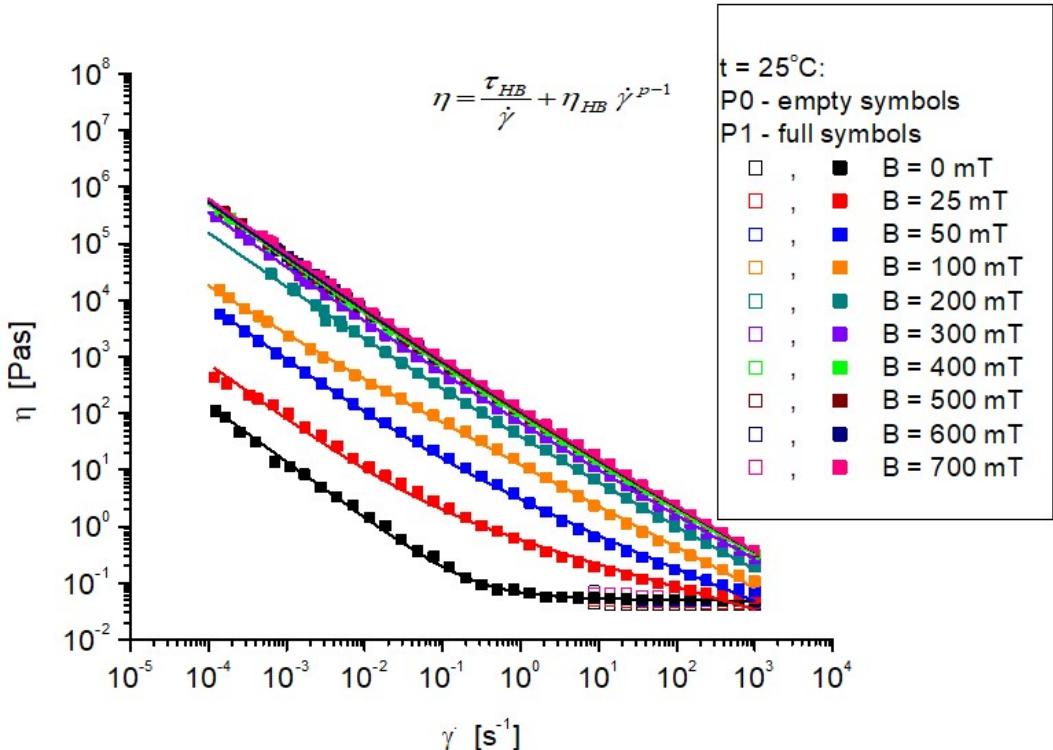
<sup>6</sup>“Babes-Bolyai” University, Faculty of Biology & Geology, Electron Microscopy Center “Prof. C. Craciun”, 5-7 Cliniciilor St., 400006 Cluj-Napoca, Romania

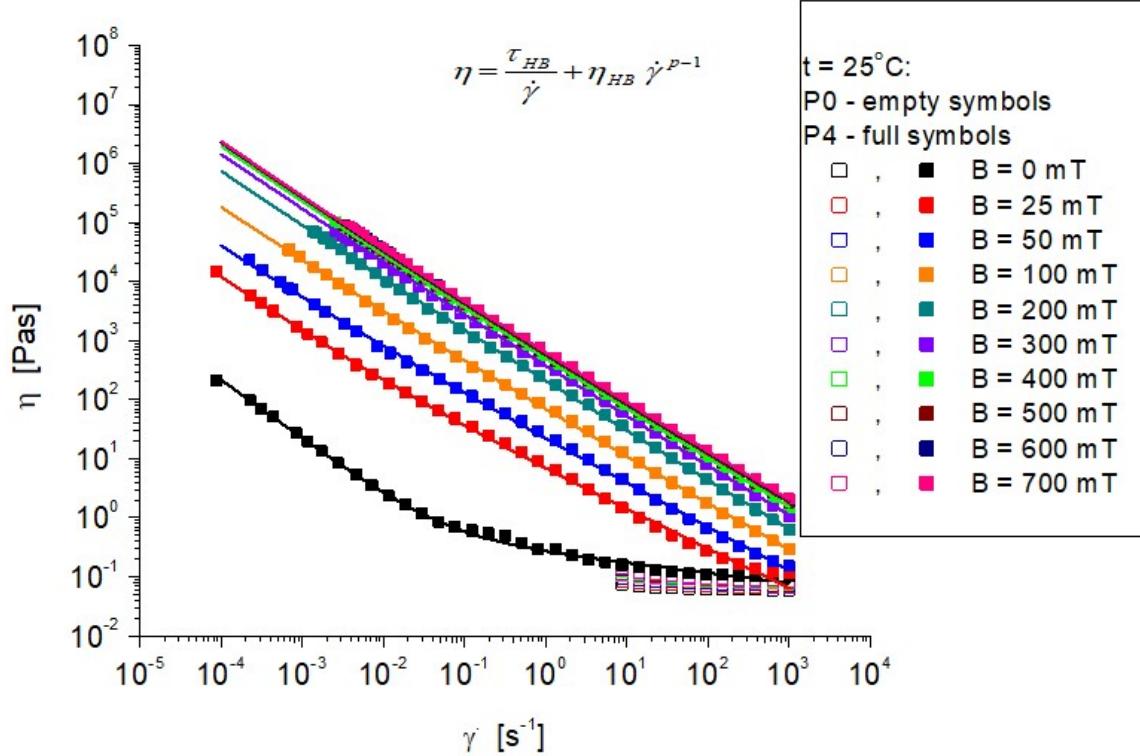
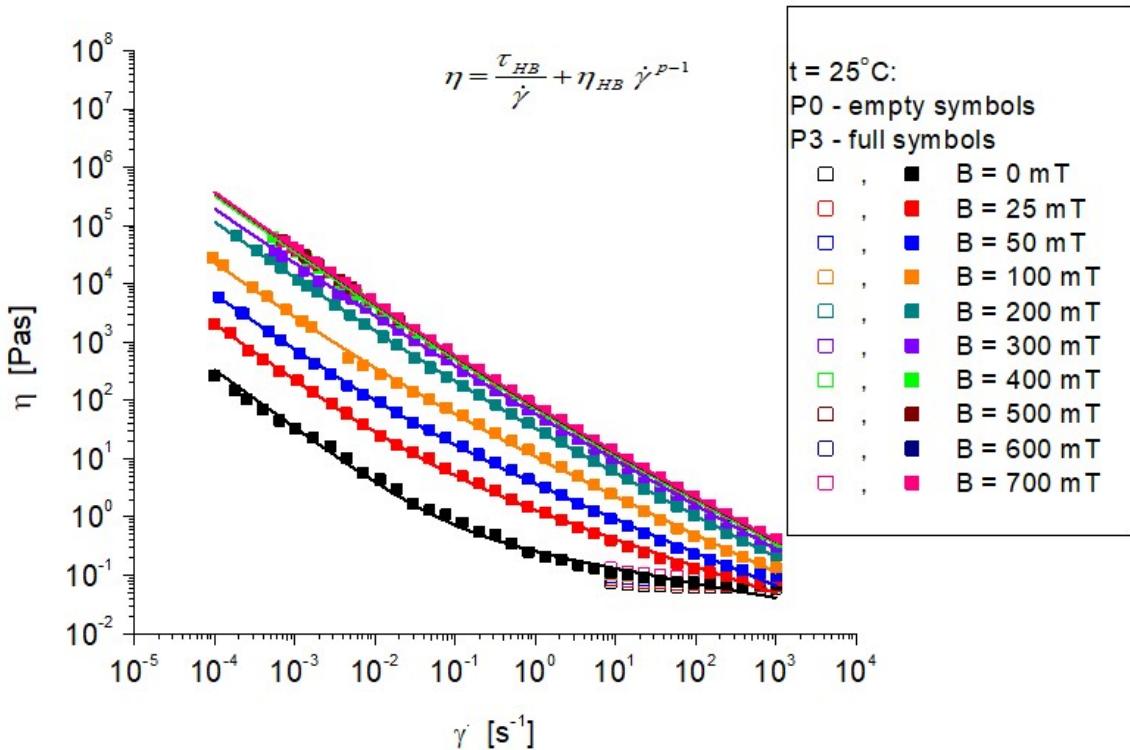
\* corresponding author: vsocoliuc@gmail.com, vlad.socoliuc@academiatm.ro

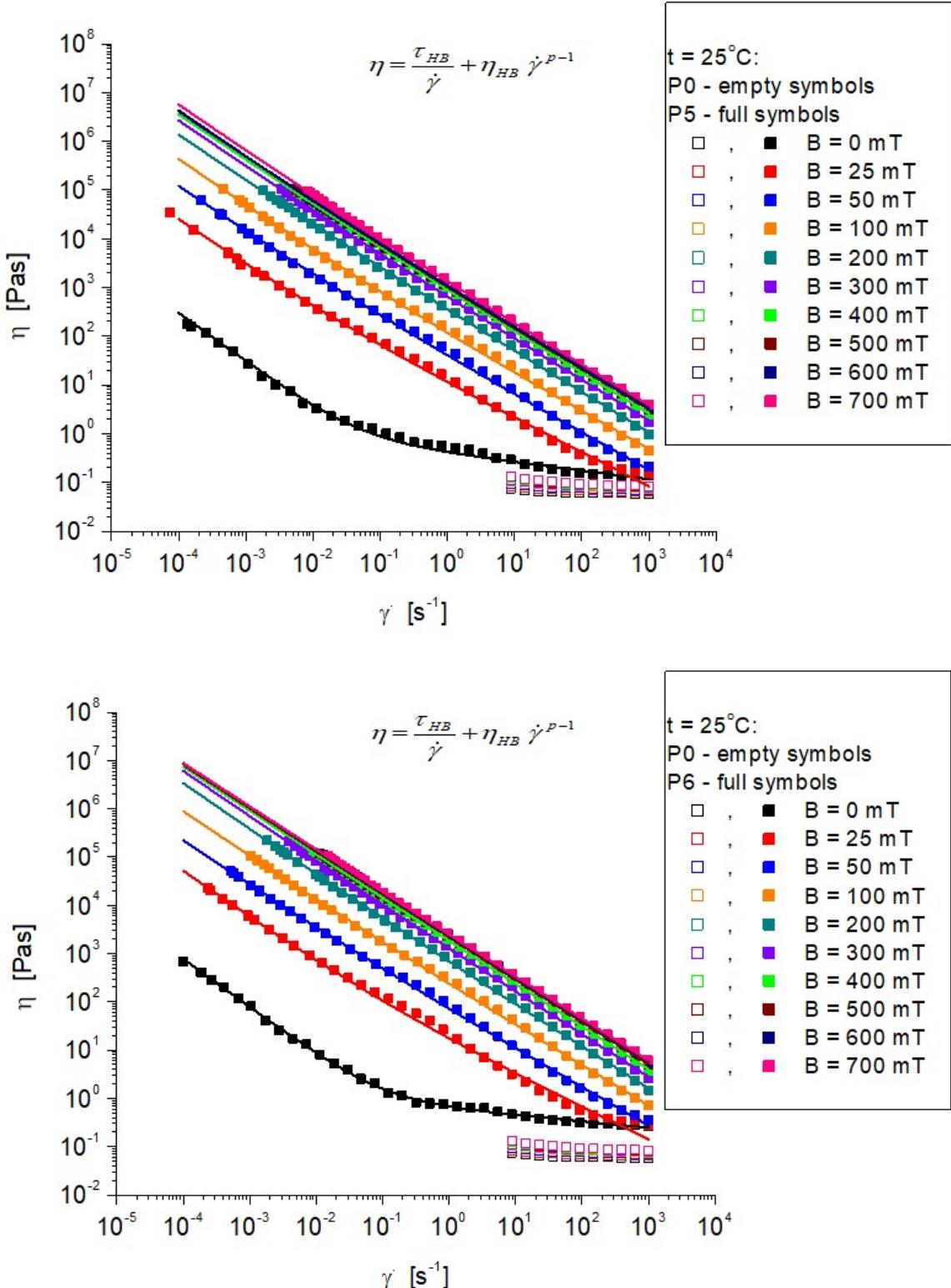
\*\* corresponding author: vevas.ladislau@gmail.com; ladislau.vevas@academiatm.ro

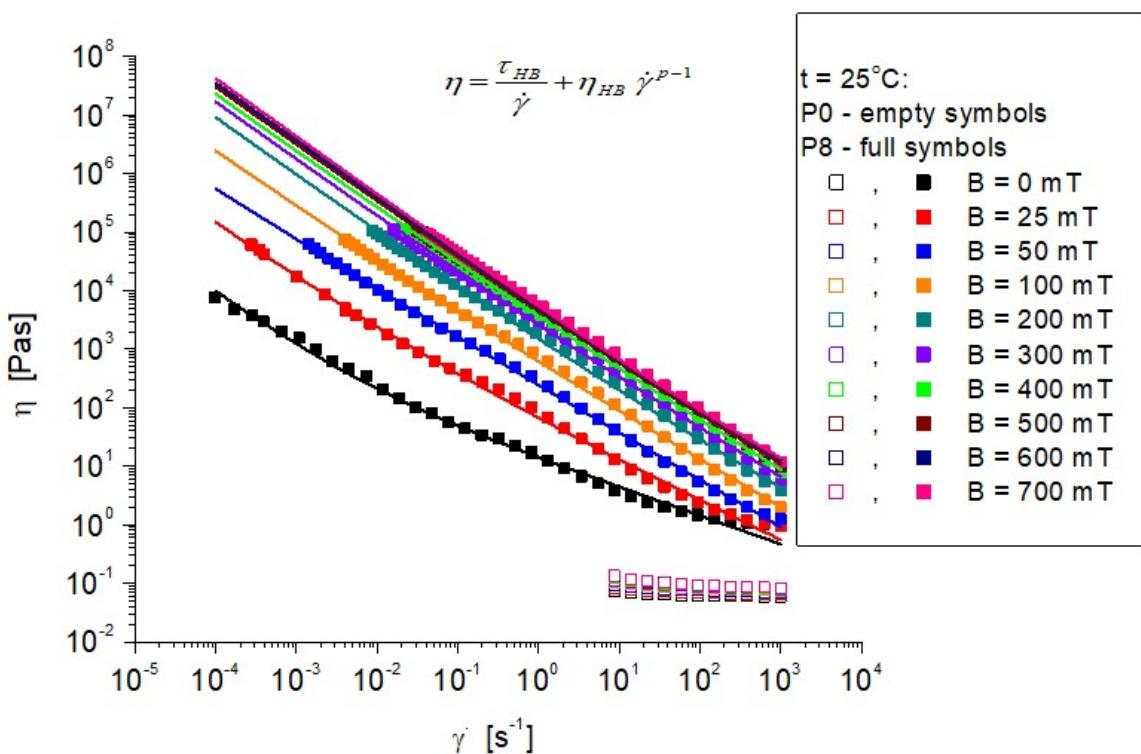
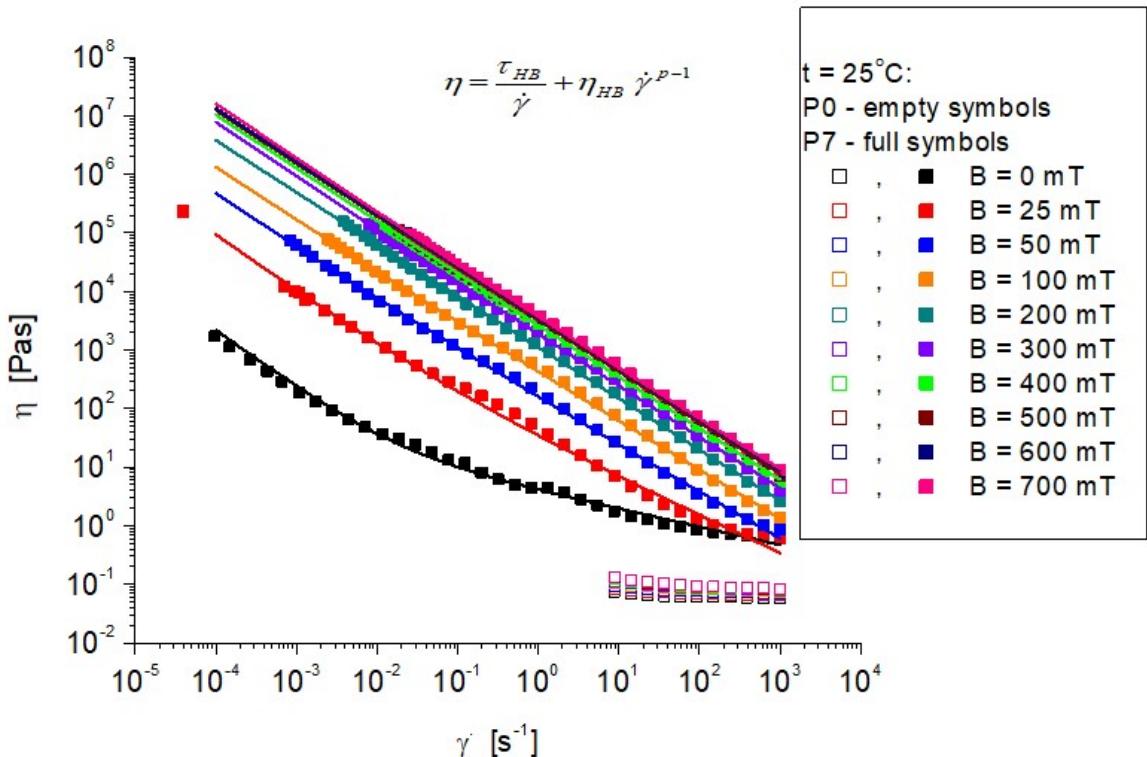
## Supplementary information

Viscosity curves of composite magnetic fluids: 0.5-15% Fe vol fraction

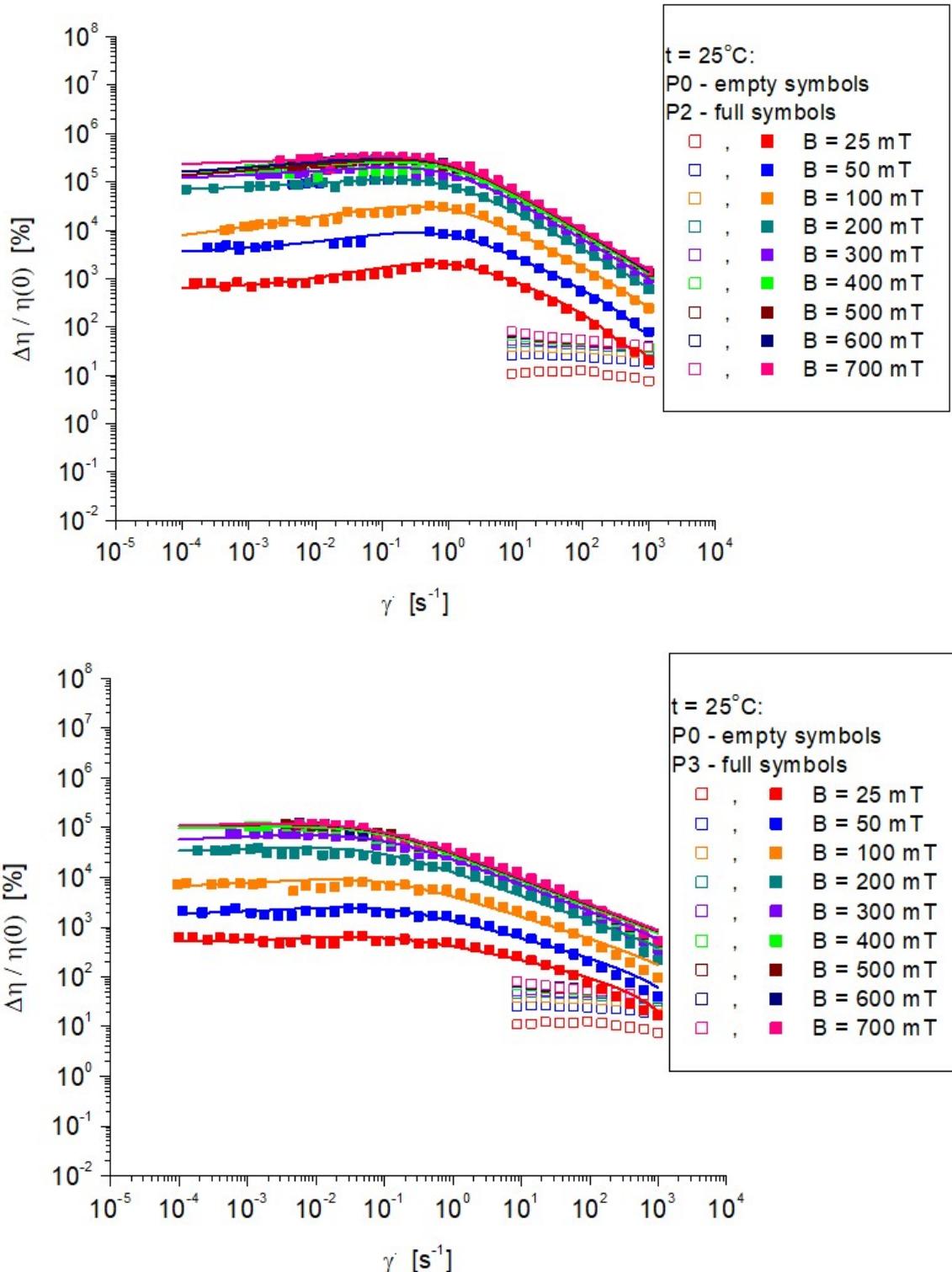


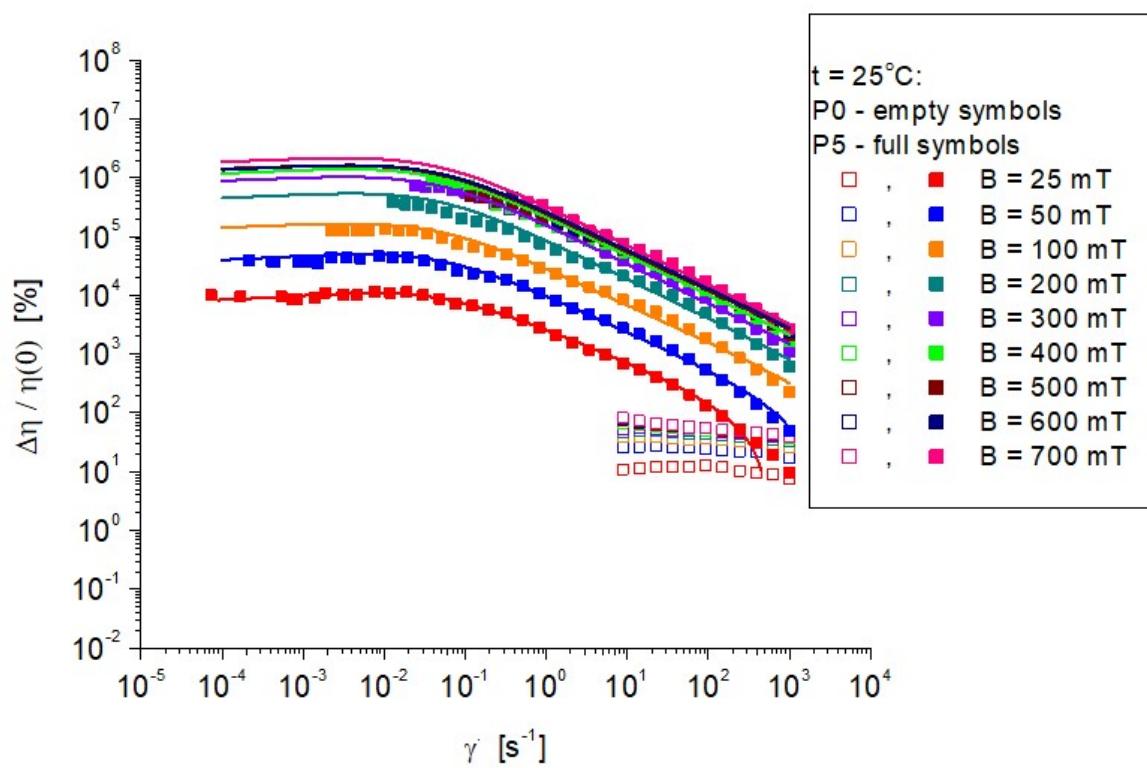
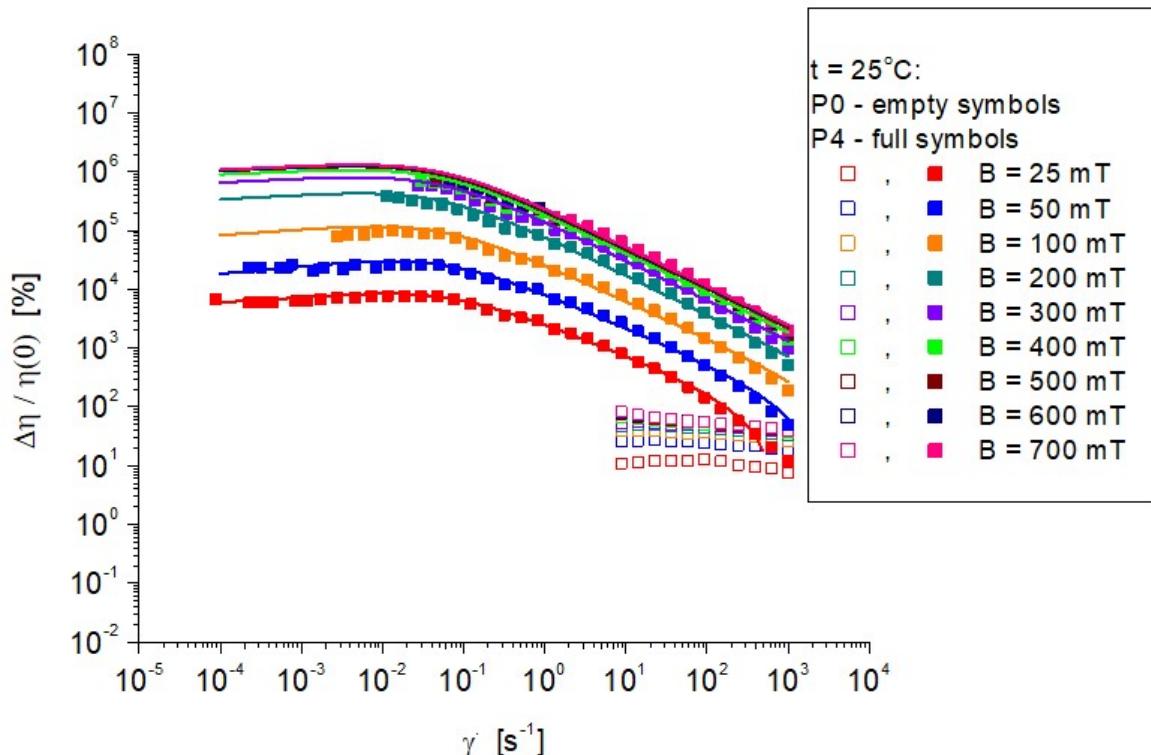


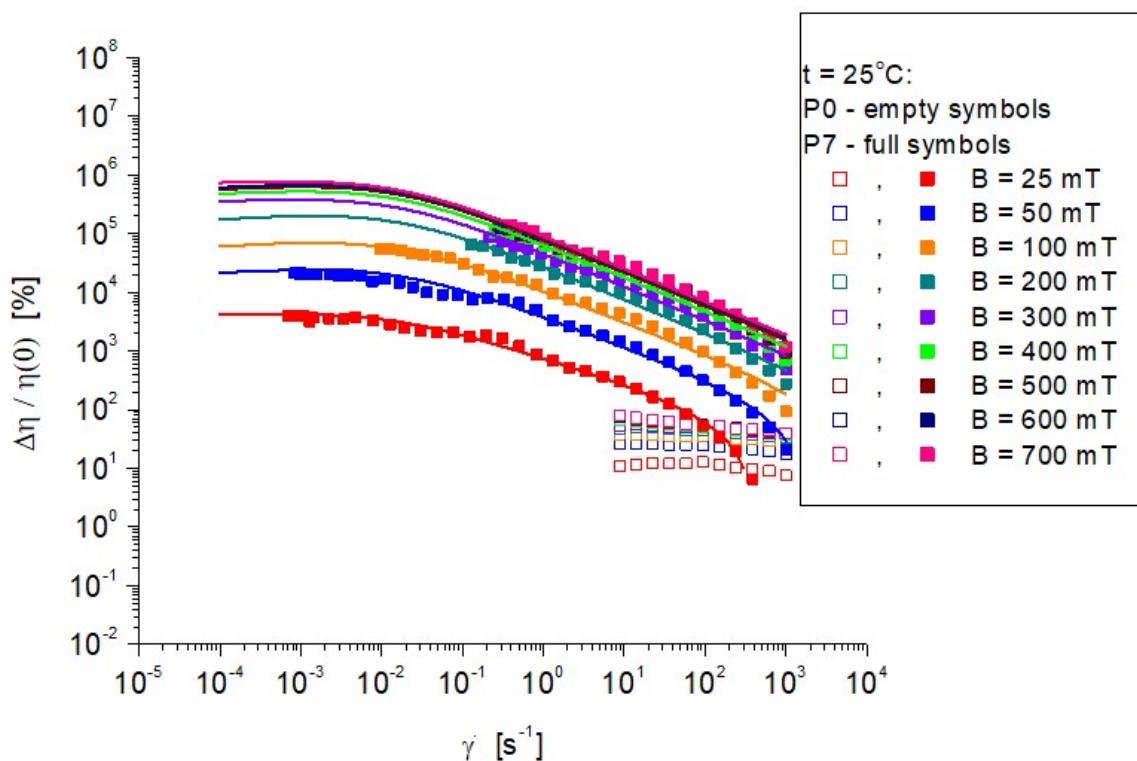
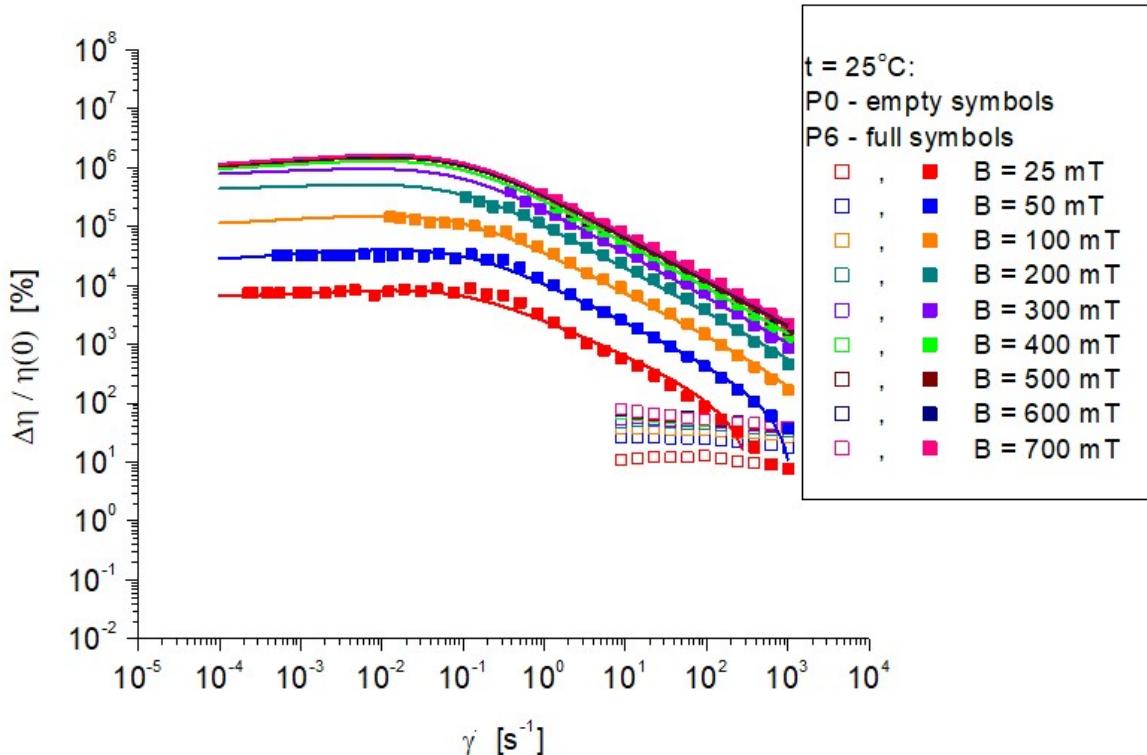




## Magnetoviscous effect of composite magnetic fluids: 0.5-15% Fe vol fraction







**Reproducibility of the sample preparation process:**

