



生産技術研究所 酒井啓司 研究室

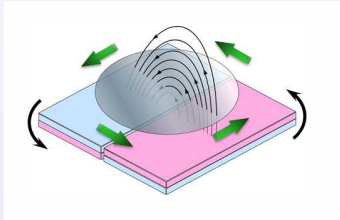
液体粘弾性計測装置(EMSレオメータ)の開発



EMSメソッド®とは...

Electro-Magnetically Spinning Method (遠隔電磁回転駆動式)

変動磁場中に導電体(金属)を置くと...



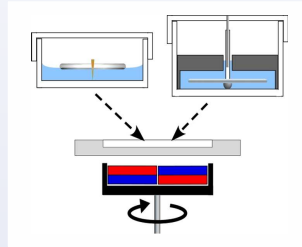
磁場の変動によって渦電流が発生

渦電流の生じた導電体に
変動磁場によるローレンツ力が働く

磁場の動きに応じて導電体も動く

EMSレオメータ

磁場を回転させると導電体も回転
これを回転粘度計のプロープに応用

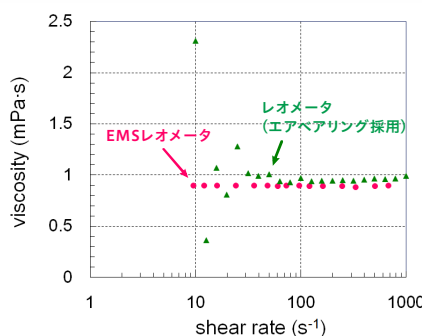
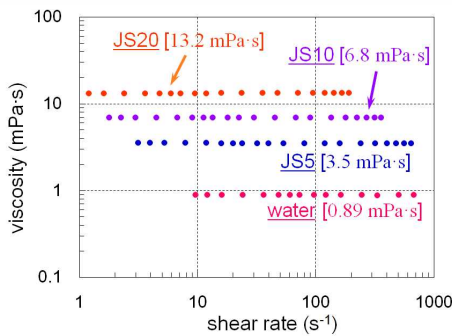


特徴

遠隔トルク駆動
&
回転状態光学的検出

長所

高精度、密閉可、
セルの使い捨て可



最新型 RheoBox



超コンパクト! (10×10×10cm)

血液粘度測定 サンプルセルを密閉し測定・廃棄できるので、血液も安全に測定可能!

Accurate viscosity of blood is in huge demand from the viewpoint of...



- a must parameter in blood flow simulation
- an index of medical check for blood sickness

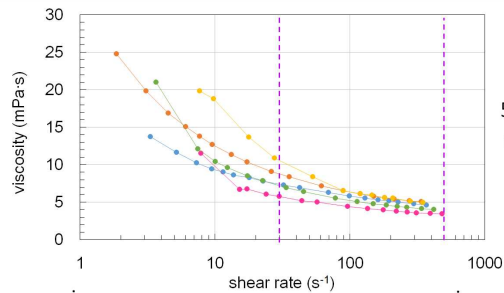
human blood: RBC, WBC, Platelet, ..., and plasma

main dispersoid

oval biconcave disk
D=7.5 μm, t=1-2 μm

dispersion medium

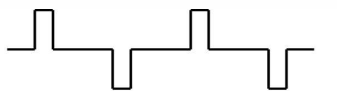
mostly(95%) water
η~2mPa·s; Newtonian



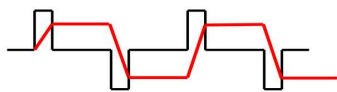
slower region ← → inner body circulation
 ▶ softness, flexibility, ... (RBC's character)
 ▶ conc. of RBCs
 ▶ plasma viscosity

粘弾性計測 (血液凝固過程の観察)

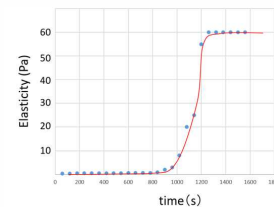
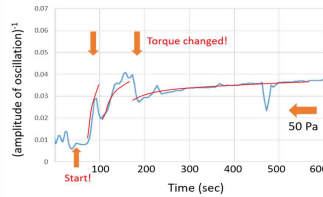
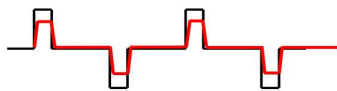
Torque applied



Fluid where no elasticity exists (no coagulation yet)
deformed state does not return when torque is off.



Fluid where elasticity exists (coagulation starts.)
deformed state returns when torque is off.



製品版RheoBox



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まで