

Potential Application Area(s)

- Cement Based Binders
- Grout Injections for Crack Repair

Patent Status

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Inventor(s)

Asst. Prof. Zeynep Başaran Bundur
Ali Amiri

Technology Readiness Level

TRL 3

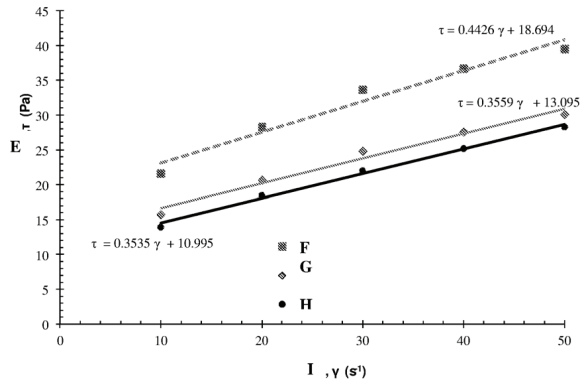
CEMENT-BASED COMPOSITIONS WITH IMPROVED RHEOLOGICAL PROPERTIES AND METHODS FOR PRODUCTION THEREOF

Problem:

Existing biomaterials in the field of construction are achieved Complex designs in structures mostly require highly flowable mixes which requires stabilizers (a.k.a viscosity modifying agents, VMA) to improve coherence and segregation resistance. However, compatibility of these stabilizers with other chemical additives and their production processes are being questioned.

Technology:

Bacterial cells were directly added to the mix water to improve the rheological performance a higher degree of thixotropy, greater low shear rate viscosity and resistance to segregation compared to control grouts.



Advantages:

- Incorporation of cells increased the viscosity leading to higher resistance to segregation and bleeding of cement-based materials.
- Compatible with superplasticizers and other rheology modifying agents.
- Applicable for various mixing procedures particularly for 3D-printing.

Related Publications:

- Mahzad Azima, Zeynep Başaran Bundur "Use of Sporosarcina pasteurii cells as rheology modifying admixtures in cement-based materials" Construction and Building Materials.v.225 (2019), pp. 1086-1097.
- Mahzad Azima, Zeynep Başaran Bundur "A bio-based rheology modifying agent inspired from nature" Submitted to Anadolu University Journal of Science and Technology A- Applied Sciences and Engineering (In press)