

ISSN 1822–7759

*Book of Abstracts  
of the 15-th International Conference-School*

# **ADVANCED MATERIALS AND TECHNOLOGIES**

*27–31 August 2013, Palanga, Lithuania*

## P112. Symmetric and Asymmetric Shape Fibre in Viscous Fluid Flow and Fiberconcrete

I. Narica, V. Lusiš, O. Kononova

*Institute of Mechanics of Riga Technical University, 1 Kalku Street,  
Riga LV-1658, Latvia*

The use of fibrous concrete problems it is important to investigate the behavior of fiberconcrete liquid stream, which contribute to the development of fiberconcrete legislative and fiberconcrete load-bearing structural elements and performance prediction models. [1]

Purpose of the study - to explore the orientation of steel fiber viscous fluid flow and orient them along the main fiber concrete tensile stress trajectories.

The study of fiber motion parameters was determined using a rheological tray (Fig. 1). The fibers were inserted into the viscous liquid (glycerin) different layers (5 cm and 7 cm).

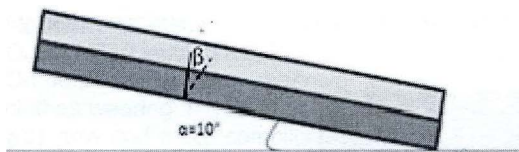


Fig. 1. Rheological tray



Fig. 2. Used fibers

In the course was made 6 fiberconcrete prisms using the fiber off-center center of gravity and 6 prisms with symmetric fibers see fig.2 (the prism of dimensions 100×100×300 mm). Test sample preparation meets Riga Technical University Latvian invention patent No. 14540. [2] After hardening, the model was the three-point flexural loading to failure loads within their carrying capacity macro crack stage. Analysis of experimental data, it was concluded that the viscous fluid flow more easily controlling the fiber off-center center of gravity, motion parameters (displacement, angle) varies more smoothly than the symmetric fibers. Fiber concrete specimens with off-center center of gravity of fibers showed a higher strength than the models with symmetric fibers.

**Keywords:** viscose fluid, steel fibres, asymmetric fibres, fiberconcrete.

### References:

1. Eiduks M., Krasnikovs A., Dunsis E., Kononova O. Scientific Journal of Riga Technical University Transport and Engineering. Mechanics. Volume 33. 2010. pp.98-102.
2. Lapsa V., Krasnikovs A., Lusiš V., Oriented fiberconcrete reinforcement method and device. Riga Technical University Latvian invention patent Nr. LV14540.