

# Scientists create new system of concrete building structures

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Scientists of SPbPU invented new system of concrete building structures. Credit: Peter the Great Saint-Petersburg Polytechnic University

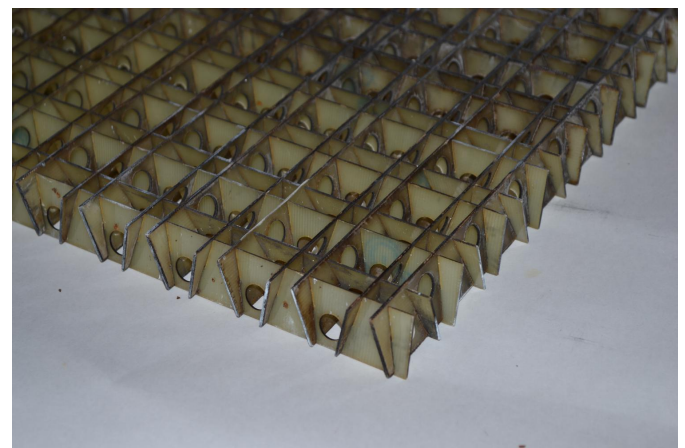
Professor Andrey Ponomarev of Peter the Great Saint-Petersburg Polytechnic University and graduate student Alexander Rassokhin have developed several types of building blocks for construction based on nanostructured high-strength lightweight concrete reinforced with skew-angular composite coarse grids. The development has unique characteristics, enabling the increase of load-carrying capability by more than 200 percent and decrease in specific density of the construction by 80 percent. In addition, the blocks are resistant to corrosion, aggressive environments and excessive frost resistance.

Researchers calculated that the service life of the building structures made this reinforcement system will increase at least two to three times in comparison with its modern analogs.

"This system ensures structural integrity even in conditions of seismic activity, since the load is

distributed throughout the structure as a whole, and not by individual reinforcement bars. The invention can be used in the [construction](#) of bridges and pedestrian crossings, non-metallic ships, and low-rise residential buildings," says Alexander Rassokhin.

The fundamentals of the research have been described in an article titled "Hybrid wood-polymer composites in [civil engineering](#)" in the *Magazine of Civil Engineering*.



Scientists of SPbPU created several types of building blocks based on nanostructured high-strength lightweight concrete, reinforced with skew-angular composite coarse grids. Credit: Peter the Great Saint-Petersburg Polytechnic University

**More information:** [DOI: 10.5862/MCE.68.5](https://doi.org/10.5862/MCE.68.5)

Provided by Peter the Great Saint-Petersburg Polytechnic University

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