CLAIMS

1. A supramolecular hydrogel based on gelatin methacrylate and peptide amphiphiles, characterized in that it is formed by electrostatic supramolecular hydrogelation between oppositely electrically charged building blocks comprising negatively electrically charged gelatin methacrylate, which is an ultraviolet-sensitive biopolymer, and positively electrically charged peptide amphiphiles, followed by a short-term ultraviolet light effect applied to the supramolecular hydrogel.

2. Hydrogel according to Claim 1, characterized in that it is obtained by electrostatic supramolecular interaction of gelatin methacrylate with bio-active peptide amphiphile molecules having a nano-fibrillary structure, comprising a hydrophobic palmitic acid tail and a positively electrically charged amino acid sequence, obtained by solid phase peptide synthesis method, and containing the YIGSR amino acid sequence for the differentiation of stem cells into neural cells.

3. Hydrogel according to Claim 1, characterized in that it comprises a neuro-inductive epitope that enables stem cells to differentiate into nerve cells.

4. Hydrogel according to Claim 1, characterized in that it is a supramolecular hydrogel composed of gelatin methacrylate as an ultraviolet-sensitive biopolymer and peptide amphiphiles, wherein each peptide amphiphile comprises a palmitic acid molecule providing formation of a nano-fibrillary structure, a VVVAAA amino acid sequence providing formation and stabilization of a β-layer structure, a KKK amino acid sequence providing positive electrical charge, and a YIGSR amino acid sequence providing a neuro-inductive epitope.

5. Hydrogel according to Claim 1, characterized in that it is prepared with the method below:

- 100 uL of gelatin methacrylate biopolymer at 10% w/v is dissolved in Dulbecco's Phosphate Buffer Saline,1% w/v positively charged PA-GSR(+) peptide amphiphile molecules dissolved in 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid buffer are injected in an amount of 50 uL into the gelatin methacrylate biopolymer,hydrogels with high mechanical strength are formed with the effect of ultraviolet light (23 mW/cm²) applied for 1 minute to the resulting supramolecular hydrogel after a 1-minute incubation period for electrostatic interaction to occur.