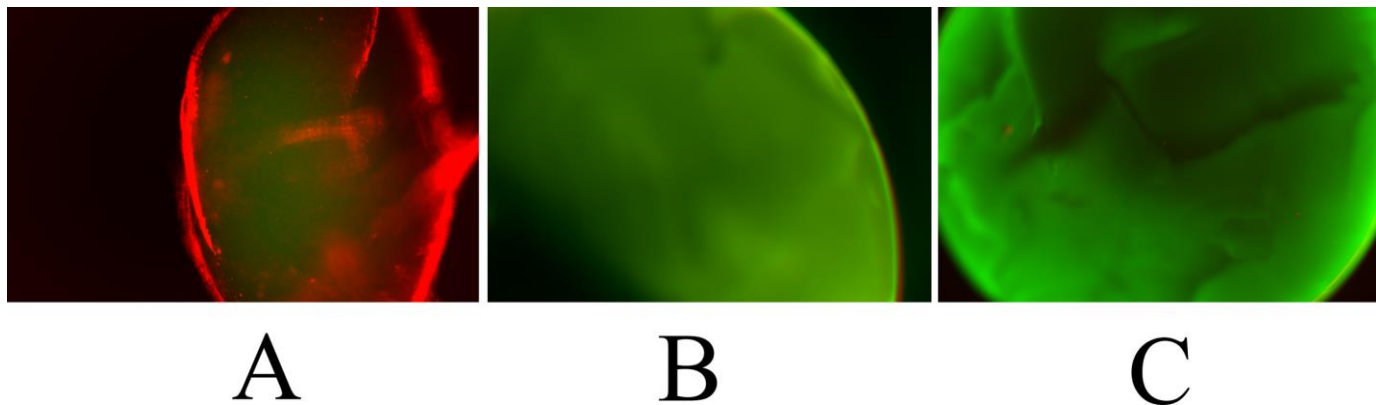
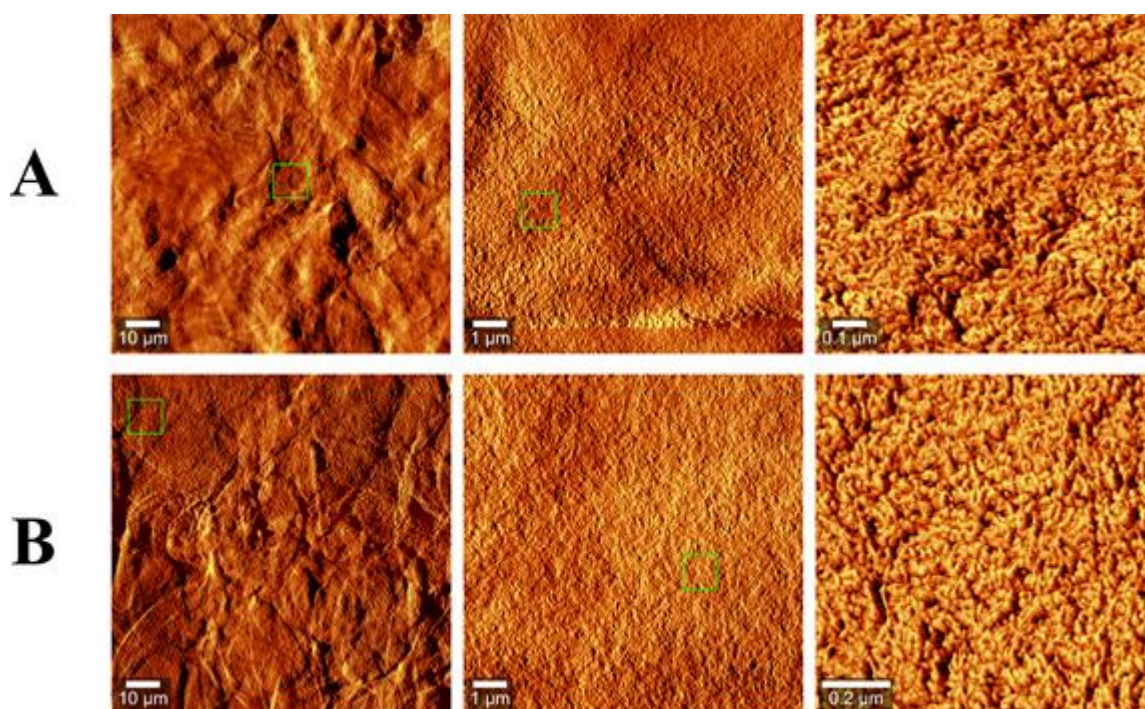


# Nickel (II) and cobalt (II) alginate biopolymers as a “carry and release” platform for polyhistidine-tagged proteins

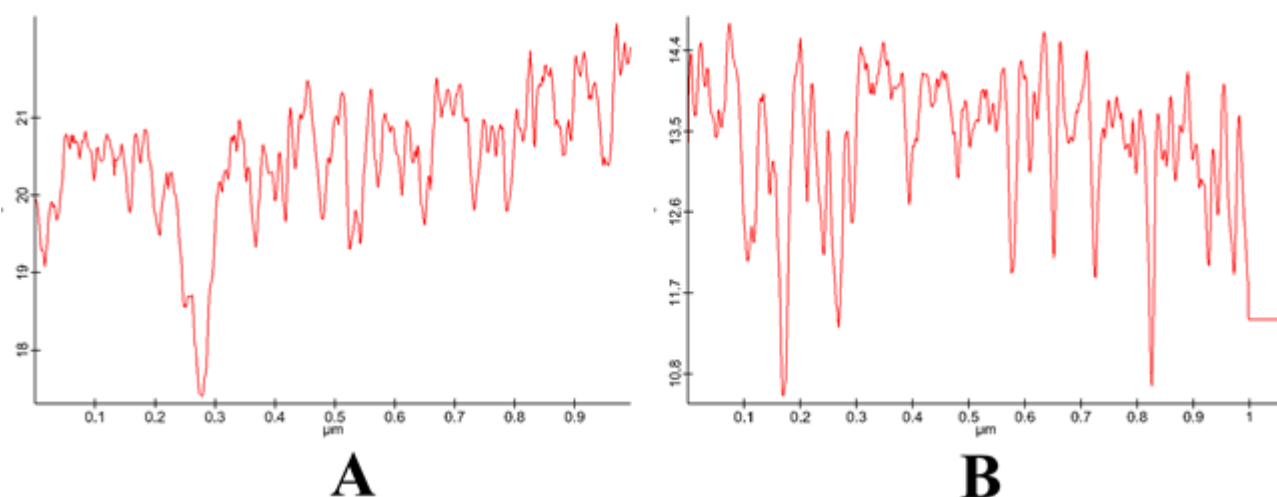
Andrei-Mihai Dumitrașcu <sup>1</sup>, Iuliana Caraș <sup>1</sup>, Cătălin Țucureanu <sup>1</sup>, Andreea-Laura Ermeneanu <sup>1</sup> and Vlad-Constantin Tofan <sup>1,\*</sup>



**Figure S1.** Overlapped phase and fluorescence microscopy images of alginate beads. Beads were obtained using an internal gelation method from 5% w/w  $\text{CaCl}_2$ ,  $\text{CoCl}_2$  or  $\text{NiCl}_2$  and 2% sodium alginate. A – calcium alginate; B – cobalt alginate; C – nickel alginate.



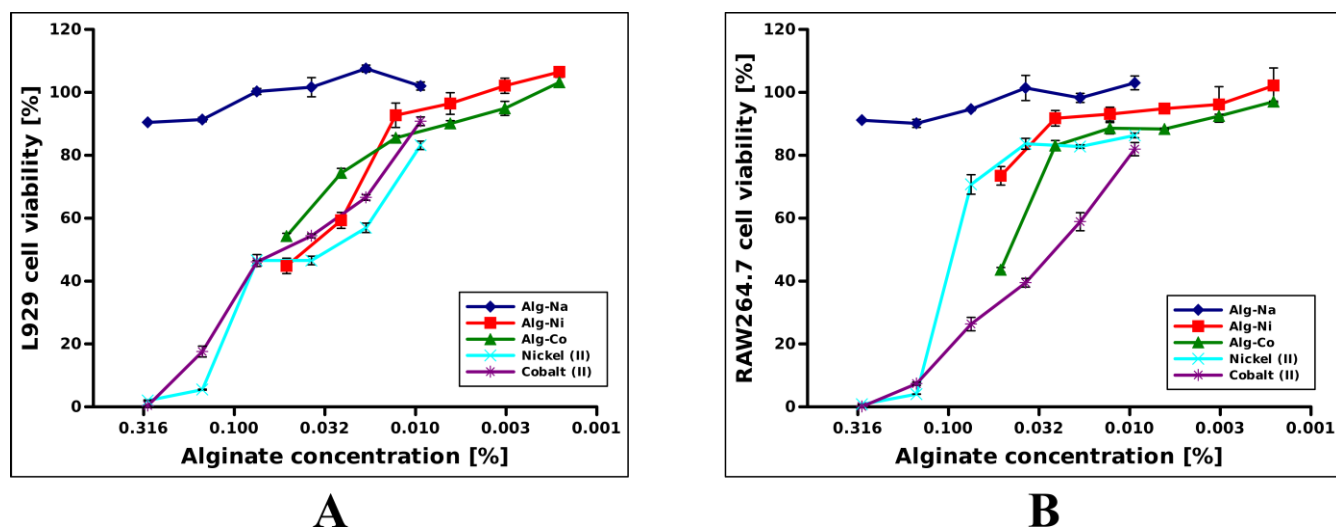
**Figure S2.** AFM surface phase scan of nickel (II) alginate – A and cobalt (II) alginate – B. From left to right: 100  $\mu\text{m} \times 100 \mu\text{m}$ , 10  $\mu\text{m} \times 10 \mu\text{m}$  and 1  $\mu\text{m} \times 1 \mu\text{m}$  scans. Green square represent area scanned at higher resolution.



**Figure S3.** AFM surface phase scan crosssection for nickel (II) alginate – A and cobalt (II) alginate – B.

**Table S1.** Gravimetric analysis of calcinated nickel (II) alginate. Samples were heated at 110°C for 1 h and weighted using an analytical balance. Values were calculated by subtracting the crucible's mass. Measurements were done in triplicate. Theoretical mass refers to mass of sodium alginate.

	Mass 1 [mg]	Mass 2 [mg]	Mass 3 [mg]	Average [mg]	Theoretical mass [mg]
Ni <sup>2+</sup> alginate	17.32	16.97	17.03	17.10 +/- 0.18	18



**Figure S4.** Cytotoxicity evaluation of nickel (II) and cobalt (II) alginates on different cell lines. A – L929 cell viability; B – RAW264.7 cell viability. Cell viability values were normalized considering positive control (cells cultured in DMEM alone) as having 100% viability. All samples were in triplicate. Values are represented as mean +/- SEM. X axis is log transformed.



**Figure S5.** Lyophilized nickel (II) alginate sample with immobilized EGFP-HisTAG.