

Siyu Chen et al. synthesized waterborne POSS-silane-urethane hybrid polymer and the fluorinated films with hydrophobicity [7]. Our team has also worked on POSS nono-buliding block as a biocompatible cage with desired functionalities to import desired properties in the resulted nanocomposite [8-10].

III. CONCLUSION

We have discussed a range of antibiofouling coatings applied on medical devices to prevent bofilm formation and create an antibiofouling surface. Resistance to bacteria adhesion seems to be a promising solution to create an anti-infection biomaterial.

REFERENCES

- [1] Katsutoshi Hori, Shinya Matsumoto, Bacterial adhesion: From mechanism to control, *Biochemical Engineering Journal* 48 (2010) 424–434.
<https://doi.org/10.1016/j.bej.2009.11.014>
- [2] Iolanda Francolini, Gianfranco Donelli, Prevention and control of bioϕlm-based medical-device-related infections, *FEMS Immunol Med Microbiol*59(2010) 227–238.
<https://doi.org/10.1111/j.1574-695X.2010.00665.x>
- [3] K. Glinel, P. Thebault, V. Humblot, C.M. Pradier, T. Jouenne, Antibacterial surfaces developed from bio-inspired approaches, *Acta Biomaterialia* 8 (2012) 1670–1684.
<https://doi.org/10.1016/j.actbio.2012.01.011>
- [4] I. Francolini , F. Crisante, A. Martinelli, L. D’Ilario, A. Piozzi, Synthesis of biomimetic segmented polyurethanes as antifouling biomaterials, *Acta Biomaterialia* 8 (2012) 549–558.
<https://doi.org/10.1016/j.actbio.2011.10.024>
- [5] Hongbin Zhang, Mu Chiao, Anti-fouling Coatings of Poly(dimethylsiloxane) Devices for Biological and Biomedical Applications, *J. Med. Biol. Eng.* (2015) 35:143–155.
<https://doi.org/10.1007/s40846-015-0029-4>
- [6] Eric J. Falde , Stefan T. Yohe, Yolonda L. Colson, Mark W. Grinstaff, Superhydrophobic materials for biomedical applications, *Biomaterials* 104 (2016) 87-103
<https://doi.org/10.1016/j.biomaterials.2016.06.050>
- [7] Siyu Chen et al., Waterborne POSS-silane-urethane hybrid polymer and the fluorinated films, *Polymer* 103 (2016) 27-35.
<https://doi.org/10.1016/j.polymer.2016.09.034>
- [8] H Yahyaei, M Mohseni, H Ghanbari, Physically Blended and Chemically Modified Polyurethane Hybrid Nanocoatings Using Polyhedral Oligomeric Silsesquioxane Nano Building Blocks: Surface Studies and Biocompatibility Evaluations, *Journal of Inorganic and Organometallic Polymers and Materials* 25 (6), 1305-1312.
<https://doi.org/10.1007/s10904-015-0241-2>
- [9] H Yahyaei, M Mohseni, H Ghanbari, M Messori, Synthesis and characterization of polyhedral oligomeric titanized silsesquioxane: a new biocompatible cage like molecule for biomedical application, *Materials Science and Engineering: C* 61, 293-300.
<https://doi.org/10.1016/j.msec.2015.12.048>
- [10] Ali Rashti, Hossein Yahyaei, Saman Firoozi, Sara Ramezani, Ali Rahiminejad, Roya Karimie, Khadijeh Farzaneh, Mohsen Mohseni, Hossein Ghanbari, Development of novel biocompatible hybrid nanocomposites based on polyurethane-silica prepared by sol gel process, *Materials Science and Engineering: C* 69, 1248-1255..
<https://doi.org/10.1016/j.msec.2016.08.037>