



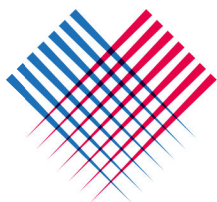
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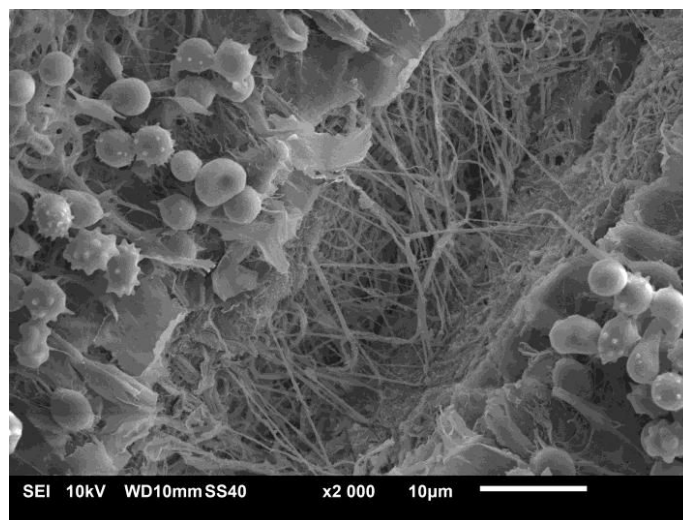
## Blood clotting in the contact with nanofibers

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Nanofibers have received considerable attention in the past years, mainly due to their vast application in medicine [1]. One of the fastest growing areas of application are wound dressings and hemostats. Among the major causes of death from trauma, massive bleeding is responsible for 30 – 40% of mortality. In the hospital, massive bleeding are the second most common cause of death (22%) just after cardiac factors (33%) [2].

Despite a large number of experiments done in the topic of blood-biomaterial interactions, coagulation mechanisms are still not fully understood. Therefore, the main objective of our work is the analysis of protein adsorption, platelet adhesion and aggregation, and blood plasma coagulation in the contact with polymer nanofibers. Various synthetic polymers, their blends with natural polymers of confirmed hemostatic effect e.g. collagen and gelatine, and additionally nanofibers made of chitosan are investigated for their potential to stop bleeding. In the final, controlled release of drugs affecting coagulation cascade will be an important step providing accelerated blood clot formation.



**FIGURE 1.** SEM micrograph presenting chitosan nanofibers and erythrocytes trapped in fibrin clot.

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### References

- [1] Experimental and numerical evaluation of drug release from nanofiber mats to brain tissue, Nakielski P et al., *J of Biomed Mat Res: Part B – App Biomat*, 103B, 282-291, 2015.
- [2] Causes of sudden unexpected death of adult hospital patients, Nichols L, Chew B, *J Hosp Med*, 7(9):706-8, 2012.