

Special Issue

Nano- and Micro-Technologies for the Treatment of Type-1 Diabetes

Message from the Guest Editors

Diabetes is a metabolic disease characterized by elevated blood glucose levels (BGLs) and the inability to maintain BGL homeostasis. Current treatment strategies consist of multiple, daily injections of insulin or transplantation of either the whole pancreas or isolated pancreatic islets. While there are different forms of insulin with tunable pharmacokinetics (fast, intermediate, and long acting), improper dosing continues to be a major limitation often leading to complications resulting from either hyper- or hypoglycemia. On the other hand, islet transplantation is a promising strategy but requires multiple donors per patient. and post-transplantation islet survival is impaired by inflammation and suboptimal revascularization. Nano- and micro-technologies in diabetes research have facilitated the development of novel glucose measurement and insulin delivery modalities which can dramatically improve the quality of life for diabetics and contribute to realize an artificial pancreas-like system. The scope of this Special Issue is to gather recent progress in the field of diabetes research at its interface with nano- and micro-technologies.

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