Dr. Akhilesh K. Gaharwar is assistant professor in the Department of Biomedical Engineering at Texas A&M University. His “Inspired Nanomaterials and Tissue Engineering (iNanoTE) Laboratory” focuses on designing, developing and integrating biomimetic nanostructures and stem cells for functional tissue engineering that have potential for clinical translation.

His research spans diverse fields, including materials science, chemistry, stem cells biology and microfabrication of polymeric biomaterials and nanocomposites. Specifically, his laboratory is developing biomimetic nanomaterials with native interface tissue-like gradient in physical and chemical properties; integrating advanced micro- and nano-fabrication technologies to mimic native interface tissue architecture; and directing stem cell behavior to obtain regionalized tissue constructs in vitro and in vivo. This integrated approach brings together a range of seemingly disparate disciplines that will address some of the complexity associated with engineering functional tissue interfaces in a manner that is otherwise not possible.

Current projects are focused on designing “bioactive” nanomaterials for regenerating damaged tissue interfaces; developing vascularized network; and devising new therapeutic strategies, especially in musculoskeletal applications.