세미나 초록

발표주제	Various Approaches to Promote Tissue Regeneration with Multifunctional 2D Nanomaterials
발표내용	Owing to recent enormous and rapid advances in nanoscience and nanotechnology, there has been a growing interest in multifunctional two dimensional nanomaterials (2D NMs) for biomedical applications, such as tissue engineering, theragnosis, biosensing, multimodal imaging and drug/gene delivery. 2D NMs such as carbon-based 2D materials [e.g. graphene, graphene oxide (GO), reduced GO (rGO), graphitic carbon nitride, etc.], silicate clays, layered double hydroxides (LDHs), transition metal dichalcogenides (TMDs), transition metal oxides (TMOs), black phosphorus (BP), transition metal carbides/nitrides (i.e. MXene; $Ti_3C_2T_x$), hexagonal boron nitride (h-BN), antimonene, and tin telluride (SnTe) nanosheets possess excellent physical, chemical, optical, and biological properties due to their uniform shapes, high surface-to-volume ratio, degree of anisotropy and surface charge, and chemical functionality. Therefore, tremendous studies have been devoted to employ those multifunctional 2D NMs in multifaceted biomedical applications. In this presentation, the properties, structures and synthetic strategies of different configurations of 2D NMs are introduced. Recent advances and paradigms of 2D NMs in a variety of biomedical applications, ranging from engineering of several tissues to regenerative medicine and therapeutic approaches are discussed afterwards. In the final part, the development prospects and challenges of 2D NMs are foreseen after summarizing the state-of-the-art research status of graphene and its derivatives, BP, and MXene, particularly among diverse promising 2D NMs. Keywords: multifunctional 2D nanomaterials; multifaceted biomedical applications; tissue engineering; graphene; MXene