세미나 초록

발표주제	Development of Surface-Enhanced Raman Spectroscopy Substrates Based on Nanoarchitectured Metals for Molecular Sensing
발표내용	Recently, high-performance sensors of hazardous molecules such as residual pesticides, air pollutants, and environmental toxicants have become an essential component of health, food safety, environmental protection, and biomedicine for improving the human condition. Traditional sensing methods such as high-performance liquid chromatography, gas chromatography, mass spectrometry, and semiconductor-based gas sensing suffer from intrinsic shortcomings, including long processing times, complicated sample preparation and measurement procedures, and high instrument costs. As a useful sensing tool, surface-enhanced Raman scattering (SERS) can be used because it is a rapid, facile, and powerful spectroscopic technique for molecule detection, with the advantages of high sensitivity, no labeling, facile sample preparation and testing, and readily available small equipment. Furthermore, SERS can be used to detect all types of analytes (solid, liquid, and gas). In general, the SERS effect is greatly enhanced in hotspot regions generated by nanogaps in plasmonic nanomaterials. Therefore, the design and preparation of SERS substrates with a large number of hotspots induced by plasmonic nanomaterials are required for high-performance SERS sensors. In this presentation, design and synthesis of nanoarchitectured nanomaterials will be introduced for SERS application. In addition, various functional materials and new fabrication technique for high-performance SERS substrates will be presented.