基于SU-8和AU-S的光纤传感制备及测试

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摘　要：

将SU-8光刻胶涂覆在经过表面处理的锥形光纤表面，其表面的环氧基与MPTMS（3-硫丙基三甲氧基硅烷）发生交联作用。TPTMS表面的-SH基与用种子溶液生长法制备的星形纳米颗粒形成很强的化学键AU-S（其能量为170kJ/mo1）。此外，我们还用这种光纤传感对不同浓度的酒精和甲胆紫溶液进行了透射谱测量。最后测试结果表明这种表面修饰了星形纳米颗粒的光纤传感对不同的物质和浓度非常灵敏，这种纳米光学传感有望被用于高灵敏度的检测中。

关键词：硅烷偶联剂；SU-8光刻胶；星形纳米金颗粒；AU-S键；纳米修饰

The Production and Testing of Optical Sensor Based On SU-8 and AU-S

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Abstract:

SU-8 was coated on the surface-treated tapered optical fibers as the oxygen groups cross-linking with the MPTMS(3 - sulfur trimethoxysilane).The thiol(-SH) of the MPTMS formed strong chemical binding(Au-S bond, about 170kJ/mo1) with the star-shaped gold nanoparticles which obtained by the Seed-mediated solution growth method.Moreover, Transmission spectrums were carried out in different concentrations alcohol and gentian violet solution by this optical fiber sensor. Finally, the experiments show that this optical fiber sensor which has modified star-shaped nanoparticles is very sensitive to different mediums and different concentration solutions and also this nanostructure optical fiber sensor is promising to be used for high-sensitive detection.

Keywords: silane coupling agent； SU-8；star-shaped gold nanoparticles； Au-S ；Nano-modified

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