

## Accepted Manuscript

A Flexible and Highly Sensitive Surface-Enhanced Raman Scattering Film in-situ Detection of Malachite Green on Fish Skin

Hongbao Sun, Hai Liu, Yiyong Wu

PII: S0167-577X(17)31102-3

DOI: <http://dx.doi.org/10.1016/j.matlet.2017.07.064>

Reference: MLBLUE 22906

To appear in: *Materials Letters*

Received Date: 25 May 2017

Revised Date: 3 July 2017

Accepted Date: 12 July 2017

Please cite this article as: H. Sun, H. Liu, Y. Wu, A Flexible and Highly Sensitive Surface-Enhanced Raman Scattering Film in-situ Detection of Malachite Green on Fish Skin, *Materials Letters* (2017), doi: <http://dx.doi.org/10.1016/j.matlet.2017.07.064>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# A Flexible and Highly Sensitive Surface-Enhanced Raman Scattering Film in-situ Detection of Malachite Green on Fish Skin

*AUTHOR NAMES: Hongbao Sun, Hai Liu\*, Yiyong Wu*

Correspondence author: Hai Liu

E-mail address: hitliuhai@126.com

Author address: School of Materials Science and Engineering, Harbin Institute of Technology, Harbin 150001, China

**Abstract:** A flexible and highly sensitive Surface-Enhanced Raman Scattering (SERS) film with PMMA/Ag/graphene/Ag/graphene hybrid structure was designed and prepared, which showed about a 2-fold enhancement in Raman signals of R6G molecules, compared with PMMA/Ag nanoparticles/graphene substrate. The SERS substrate provides very high sensitivity to R6G molecules reaching a detection limit of  $1 \times 10^{-8}$  M. The substrate can be attached directly on the tested sample owing to its excellent flexibility. In the SERS test on the malachite green (MG) soaked fish samples, the use of such substrate makes the in-situ detection being accomplished within 5 min under sensitivity of  $10^{-7}$  M, which shows very high practical utility.

**Keywords:** Raman; nanoparticles; graphene; flexible substrate; malachite green

## 1. Introduction

Surface Enhanced Raman Spectroscopy (SERS) as a non-destructive analytical methods provided a high-sensitive technique for the chemical and biological molecular detection [1-2]. Recently, the flexible SERS substrates have attracted enormous attention due to its great

Download English Version:

<https://daneshyari.com/en/article/5463264>

Download Persian Version:

<https://daneshyari.com/article/5463264>

[Daneshyari.com](https://daneshyari.com)