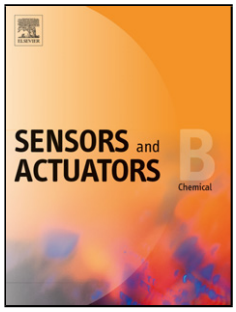


Title: Aluminum and Copper Nanostructures for Surface-enhanced Raman Spectroscopy: A One-to-one Comparison to Silver and Gold

Authors: Raul D. Rodriguez, Evgeniya Sheremet, Maxim Nesterov, Stefan Moras, Mahfujur Rahaman, Thomas Weiss, Michael Hietschold, Dietrich R.T. Zahn

PII: S0925-4005(18)30280-6
DOI: https://doi.org/10.1016/j.snb.2018.02.006
Reference: SNB 24101

To appear in: *Sensors and Actuators B*

Received date: 16-8-2017
Revised date: 31-1-2018
Accepted date: 1-2-2018

Please cite this article as: Raul D.Rodriguez, Evgeniya Sheremet, Maxim Nesterov, Stefan Moras, Mahfujur Rahaman, Thomas Weiss, Michael Hietschold, Dietrich R.T.Zahn, Aluminum and Copper Nanostructures for Surface-enhanced Raman Spectroscopy: A One-to-one Comparison to Silver and Gold, Sensors and Actuators B: Chemical https://doi.org/10.1016/j.snb.2018.02.006

Aluminum and Copper Nanostructures for Surface-enhanced Raman Spectroscopy: A One-to-one Comparison to Silver and Gold

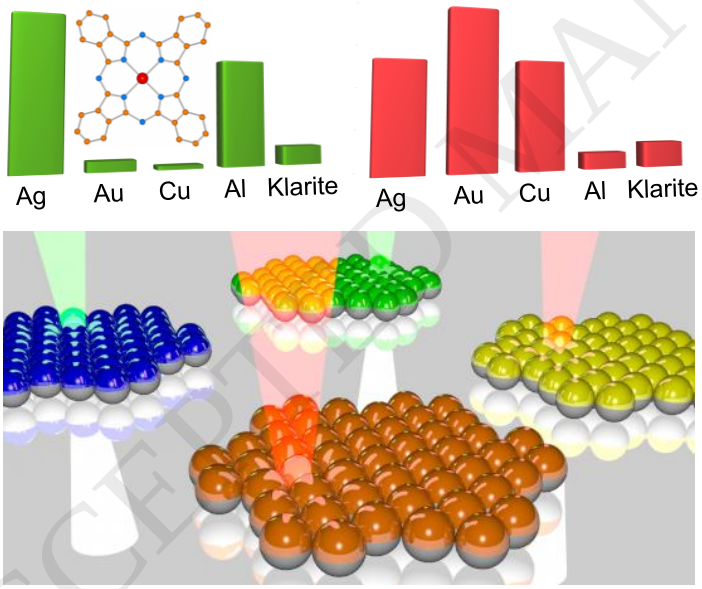
Raul D. Rodriguez[* a,b,c], Evgeniya Sheremet[d], Maxim Nesterov[e], Stefan Moras[b], Mahfujur Rahaman[b], Thomas Weiss[e], Michael Hietschold[d], Dietrich R.T. Zahn[b,c]

[a] Tomsk Polytechnic University, 30 Lenin Ave., 634050 Tomsk, Russia.
[b] Semiconductor Physics, Chemnitz University of Technology, D-09107 Chemnitz, Germany.
[c] Center for Advancing Electronics Dresden (cfaed), Chemnitz University of Technology, Chemnitz, Germany.
[d] Solid Surfaces Analysis Group, Chemnitz University of Technology, D-09107 Chemnitz, Germany.
[e] 4th Physics Institute and Research Center SCoPE, University of Stuttgart, Stuttgart, Germany.

*Croessponding author Email: raul.rodriguez@physik.tu-chemnitz.de

*ORCID iD: 0000-0003-4016-1469

Graphical abstract



Sensing applications with surface-enhanced Raman spectroscopy (SERS) can benefit from aluminum and copper. Self-assembled monolayers of nanospheres coated with copper and aluminum films produce controlled plasmonic nanostructures. When all other parameters are kept constant, copper and aluminum are found to be at the same level of SERS performance as nanostructures made with silver or gold. This finding opens the door to inexpensive large-scale development of SERS sensors.