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Increased sensitivity of amorphous carbon based gas-sensors due to different Au nanostructures. K. W. LIU, B. Y. CHEN, Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan, H. S. HSU, Department of Applied Physics, National Pingtung University, Taiwan, S. P. JU, Department of Mechanical and Electro-Mechanical Engineering, National Sun Yat-Sen University Kaohsiung, Taiwan, S. J. SUN, Department of Applied Physics, National University of Kaohsiung, Taiwan, H. CHOU, Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan, SPINTRONICS LAB COLLABORATION — We reported that gold nanoparticles attached with the amorphous carbon (a-C) could promote sp^2 bonds around the gold nanoparticles. This can change the hopping characteristics and can control the carrier transport which results in increased conductivity. These nanocomposites exhibit a superior sensitivity towards NH_3 at room temperature, as well as good reproducibility and short response/recovery time. To increase the sensitivity of gas-sensors we need to increase the interface effect between gold nanostructures and a-C. To increase this interface effect we choose gold nanorods instead of nanoparticles. To grow the gold nanorods along z-direction perpendicular to the substrate surface we use low temperature deposition technique. Improvement in the interfacial effect will greatly improve the sensitivity of gas-sensors.

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