# Applications of metal nano-networks in electronic devices

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Nano-networks composed of randomly distributed nanowires has great potential for the application to future device in that it has inherent flexibility, good electric conductivity and, high surface area to volume ratio. 2-3 nm Pt nano-networks and 10-15 nm Au nano-networks were synthesized through simple solution phase method, and applied to semiconductor devices for gas sensing and metal interconnection.
Nano-network hydrogen sensors based on Schottky diode and HEMT on AlGaN/GaN heterostructure was demonstrated. Compared to thin film type hydrogen sensors, both two types of hydrogen sensor using Pt nano-networks as sensing materials exhibit dramatically improved sensing characteristics. This is due to the huge catalytic surface area increase of nanostructured Pt .
We also confirmed the feasibility of nano-network as flexible interconnection. Gold nano-networks grown by simple solution method on the flexible polyimide substrate shows reliable electrical conductivity for repeated physical bending of the substrate. This is ascribed to the innate elastic characteristics of sinuous nano-networks.