

Surface plasmon modified photo-electrochemistry

The surfaces of metal electrodes used in photo catalysis and solar cells are usually flat, which largely limits the efficiency of light absorption due to their high reflection. If textured metal electrodes are used, light absorption can be enhanced considerably because of the excitations of surface plasmons. Thus, textured metal electrodes may improve many photo-electrochemical processes, such as photo-current, photo-voltaic, and photo-chemical reactions. Here, we demonstrate a new kind of metal electrodes with inverse-opal structures. Photo-current generated by the electrodes is enhanced considerably due to enhanced absorption.