

# Biological Routes to Gold Nanoplates

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**Abstract** – Much effort has been devoted to the synthesis of gold nanoparticles with different shapes, including the zero-dimensional nanospheres, one dimensional nanorods, and two-dimensional nanoplates. Compared to zero or one dimensional nanostructures, the synthesis of two-dimensional nanostructures in high yield has always been more involved, often requiring complex and time-consuming steps such as morphology transformation from the nanospheres, or the seeded growth process. Herein we report a high yield method for gold nanoplate synthesis using the extract of unicellular green alga *Chlorella vulgaris*, which can be carried out under ambient conditions. More than 90% of the total nanoparticle population is of the platelet morphology, surpassing the previously reported value of 45%. The control of the anisotropic growth of different planes; as well as the lateral size, has also been partially optimized.