**Green synthesis of gold nanoparticles: A Review**

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**Abstract**

Metal nanoparticles, such as those made of gold, have a variety of peculiar chemical and physical properties because of the influence of their larger surface area and lower quantum sizes as compared to other metal atoms or bulk metal. The size- and shape-dependent properties of gold nanoparticles are particularly intriguing (GNPs). Metal nanoparticles have received a lot of interest due to their unique characteristics and promising prospects in photonics, electronics, biological sensing, and imaging. Modern advances in the synthesizing of GNPs are covered in this review. Green chemistry measures were used to assess the production of gold nanoparticles, with a focus on process mass intensity (PMI). Based on these measurements, opportunities for improving synthetic approaches were found. With PMIs that were often in the thousands, solvent usage was found to be the main obstacle for nanoparticle syntheses, even ones that were otherwise considered to be environmentally friendly. Since ligated metal nanoparticles are the most industrially relevant but least environmentally friendly, their synthesis by arrested precipitation was chosen as the best chance for significant advances. Gold nanoparticles of small sizes and biostability are produced biochemically, and they are used in many biological applications. Numerous papers describe the creation of gold nanoparticles by mixing reducing and stabilizing agents.