

Reproducible Lateral Flow Performance with i-colloid 40 nm Gold

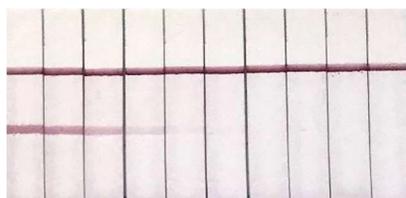
i-colloid gold nanoparticles

i-colloid 40 nm gold nanoparticles (Au40) are produced by a pulsed-laser ablation in liquid (PLAL) process, in which a bulk gold target is fragmented into nanoparticles by a focused, high-power, pulsed-laser beam (Technical Note T11). The laser ablation process results in stable colloidal solutions without surfactants or capping agents. Antibodies can be efficiently conjugated to the particle surfaces by passive adsorption. Robust and scalable production processes allow Au40 to be available at three concentrations - OD1, OD5, and OD10.

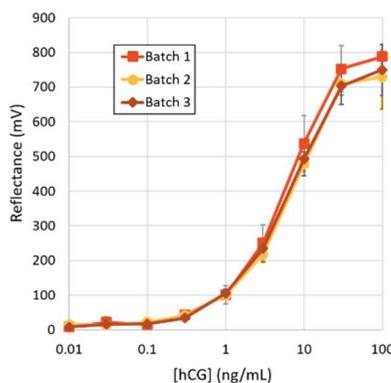


Batch-to-batch performance consistency

The batch-to-batch performance consistency of i-colloid 40 nm gold (Au40) was evaluated in a half-strip lateral flow immunoassay to detect human chorionic gonadotropin (hCG). Antibodies specific to hCG antigen (test line) and anti-hCG antibody (control line) were striped on a nitrocellulose membrane which was then laminated onto a backing card along with an absorbent pad and cut into strips. Anti-hCG antibodies were passively conjugated to 3 independent Au40 batches, and each conjugate batch was incubated with different concentrations of hCG antigen and allowed to flow up a strip for 15 minutes. The dose-response curves of the average replicate (n=3) signal at each hCG antigen concentration were consistent between the 3 batches, with <10% CV at all concentrations down to 0.3 ng/mL.



Lateral flow strips from a dose response curve



[hCG] (ng/mL)	Interbatch %CV
100	3%
30	3%
10	5%
3	6%
1	2%
0.3	10%
0.1	15%
0.03	19%
0.01	30%
0	12%

Passive conjugation at high OD

The performance of conjugates prepared by passive adsorption to Au40 at OD1, OD5, and OD10 was evaluated by hCG lateral flow immunoassay. Conjugation was performed in 5 mL volume at each OD by maintaining the same antibody-to-gold ratio.

Consistent lateral flow assay results were obtained from conjugates prepared by passive adsorption to Au40 at OD1, OD5, and OD10.

