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Toward transparent projection display: recent progress in frequency-selective scattering of RGB light based on metallic nanoparticle's localized surface plasmon resonance

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This file includes:

Fig. S1 | A comparison between efficiencies of the gain material system and the metal-dielectric system.

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The three structures (Silica/Au with gain for red, Silica/Ag with gain for green, and Ag/Silica with gain for blue) of Fig. 24 from main article, are compared with their corresponding structures optimized without gain in Fig. S1. For more detailed comparison between gain material system and metal-dielectric system (a comparison that considers structures of Au sphere, silica/Au, silica/Ag, silica/Al, and Ag sphere), readers may refer to Ref.[10] of main article, which is one of our group's published papers. By observing Fig. S1, it is obvious that introducing gain materials significantly improves the scattering performance, which is characterized by the sharp scattering peak and low absorption level.

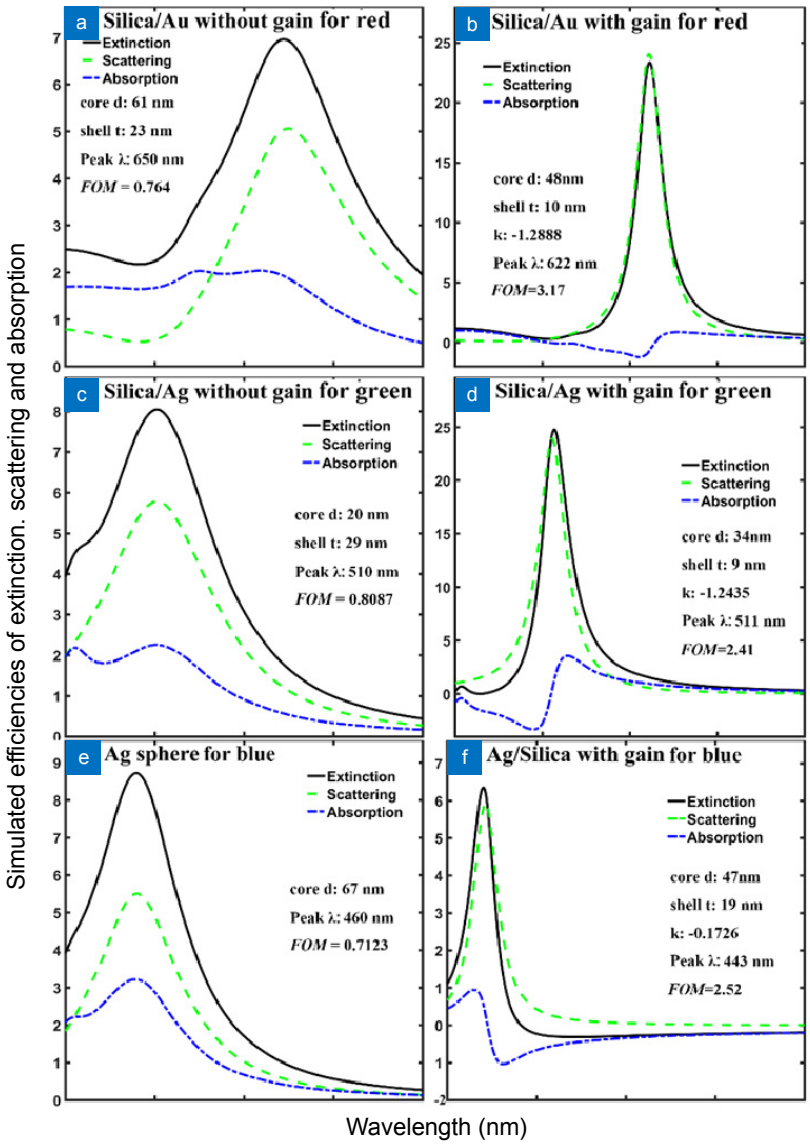

Fig. S1 | A comparison between efficiencies of the gain material system and the metal-dielectric system. (**a**) Optimized results for red light scattering based on Silica/Au (Core/Shell) without gain. (**b**) Optimized results for red light scattering based on Silica/Au with gain. (**c**) Optimized results for green light scattering based on Silica/Ag without gain. (**d**) Optimized results for green light scattering based on Silica/Ag with gain. (**e**) Optimized results for blue light scattering based on Ag sphere without gain. (**f**) Optimized results for blue light scattering based on Ag/Silica with gain. For structures with gain (i.e., (b), (d) and (f)), their Silica (as core or shell) is doped with gain materials. Subfigures (b), (d) and (f) are the same as subfigures (a), (b) and (c) of Fig. 24 from the main article. Figure adapted with permission from Ref.[10] of main article, Optical Society of America.