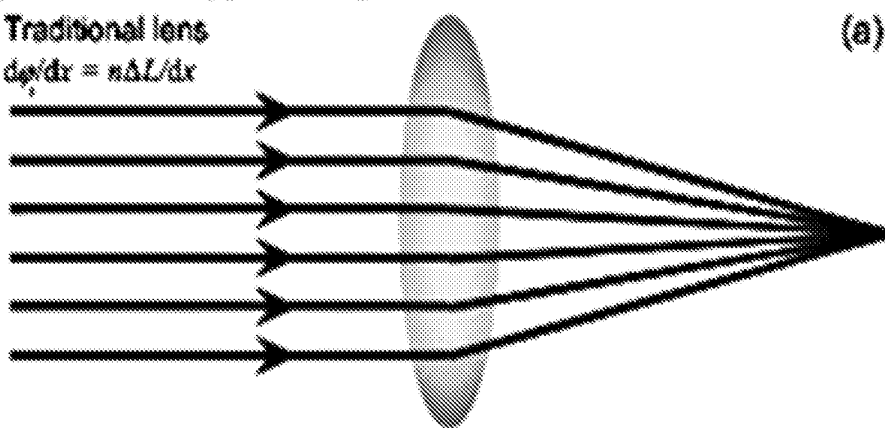


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FIG. 1A

gradient to a hyperbolic profile.

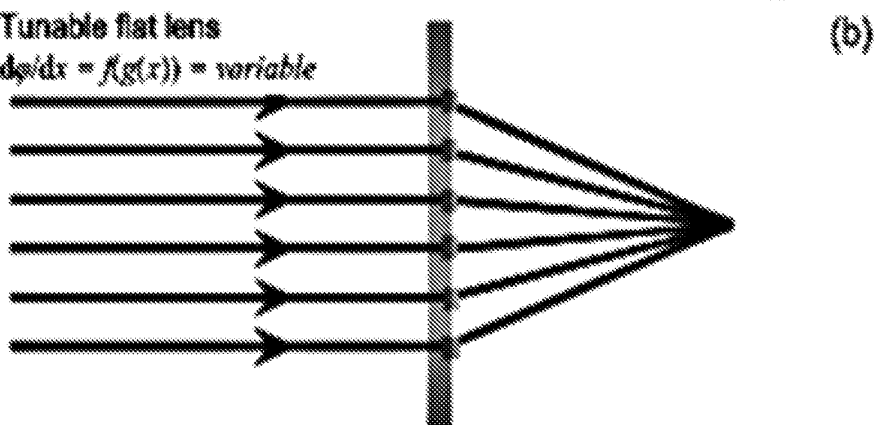
Traditional lens

$$d\phi/dx = n\Delta L/dx$$

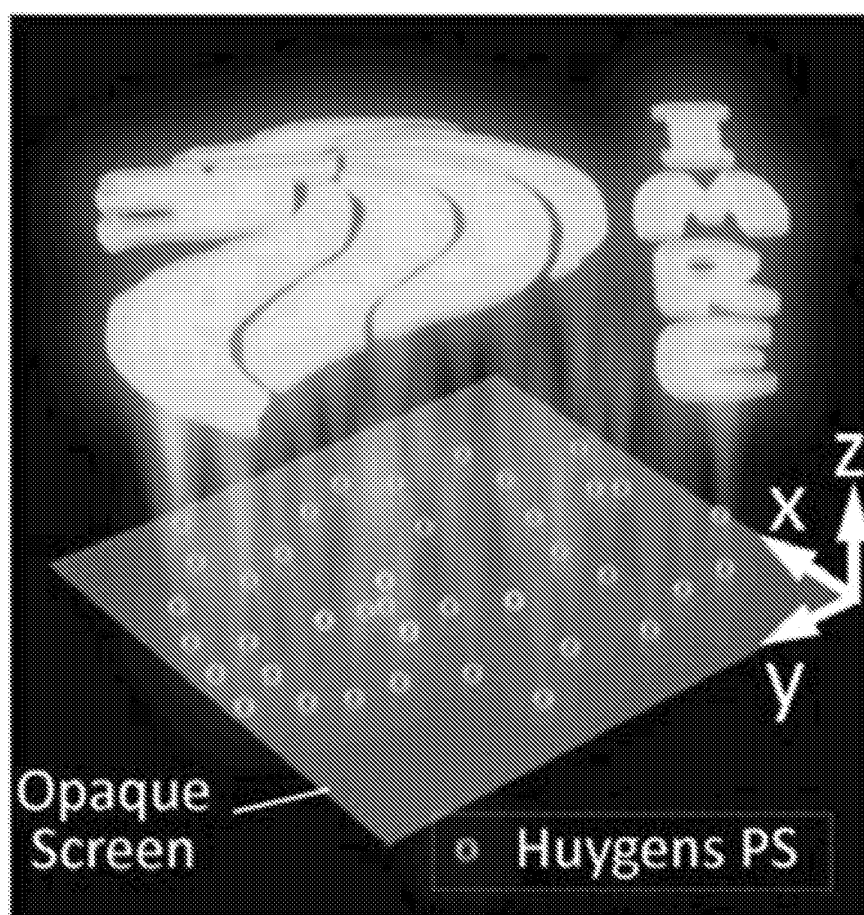


Tunable flat lens

$$d\phi/dx = f(g(x)) = \text{variable}$$



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FIG. 1B



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FIG. 2

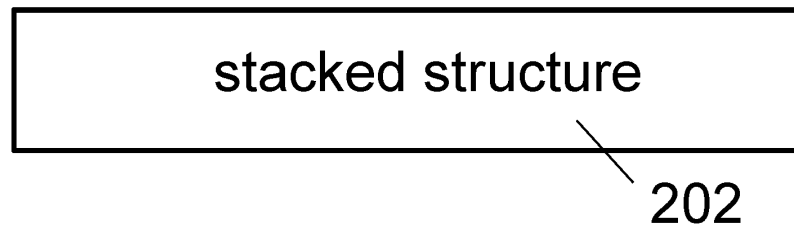
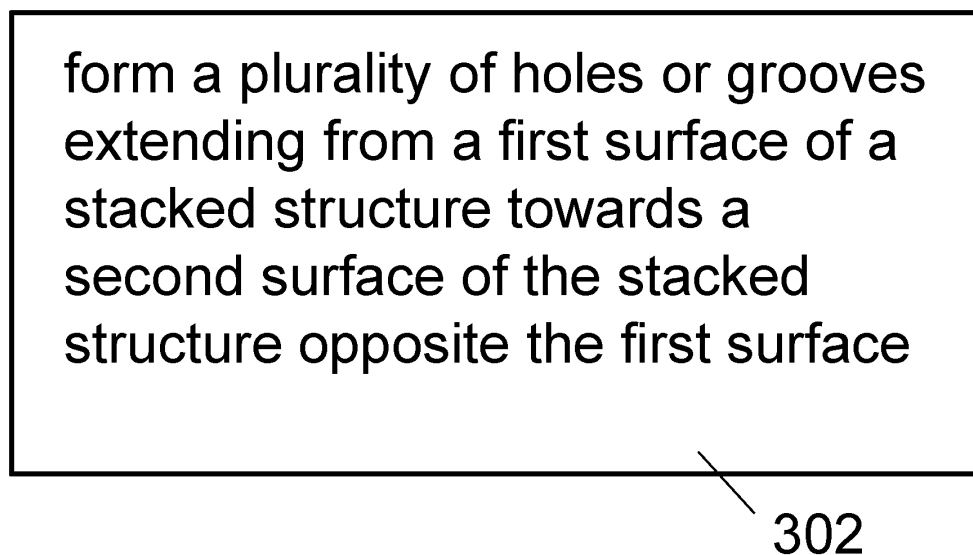
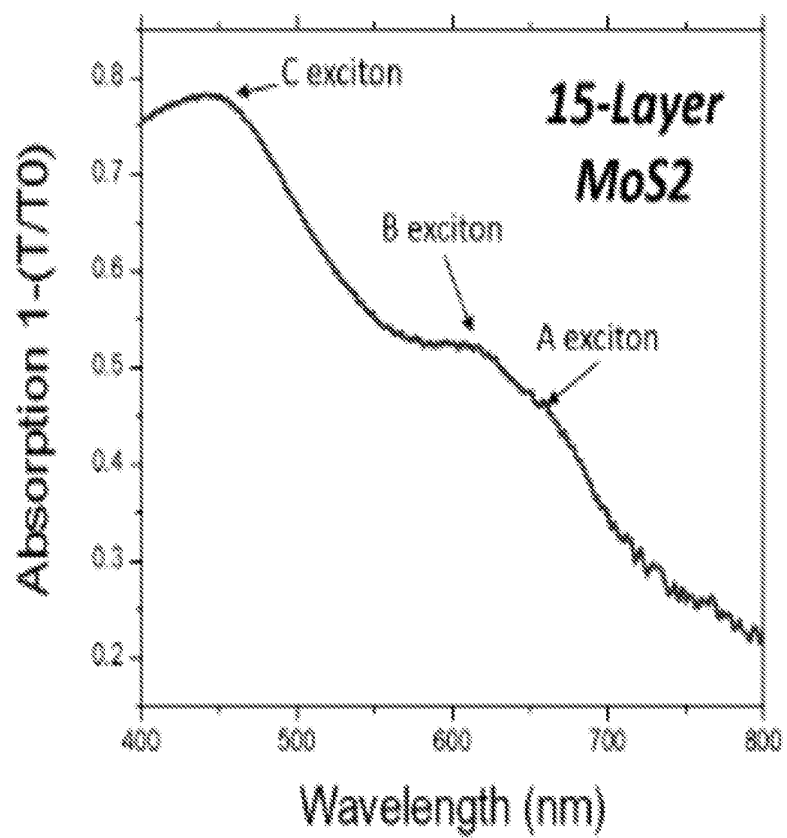


FIG. 3



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FIG. 4



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FIG. 5A

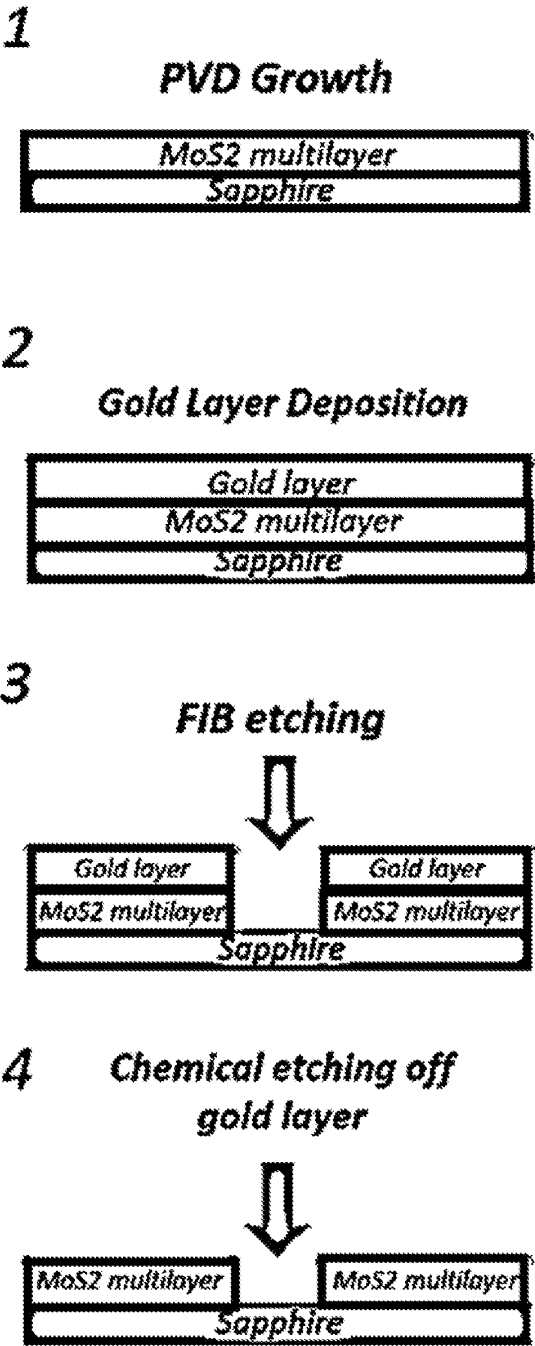


FIG. 5B

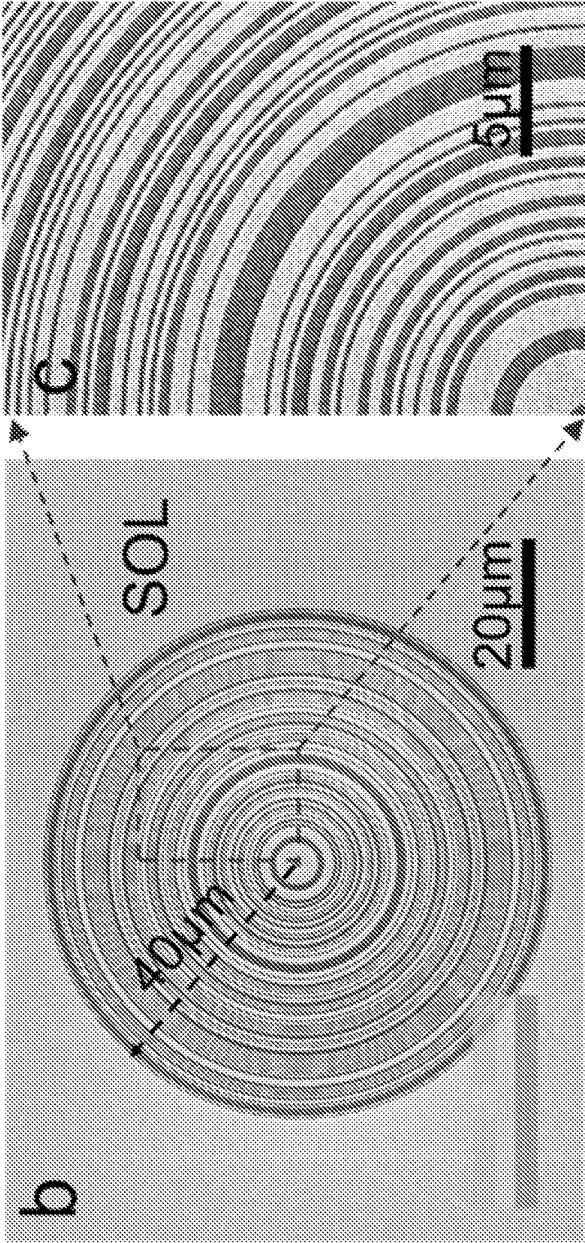


FIG. 5C

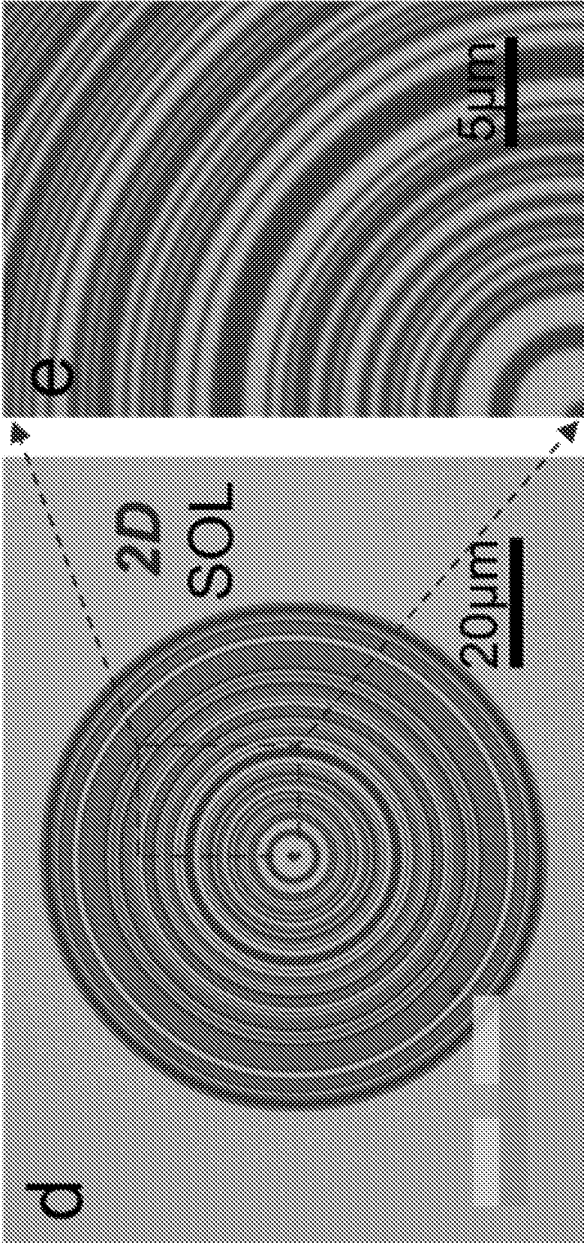
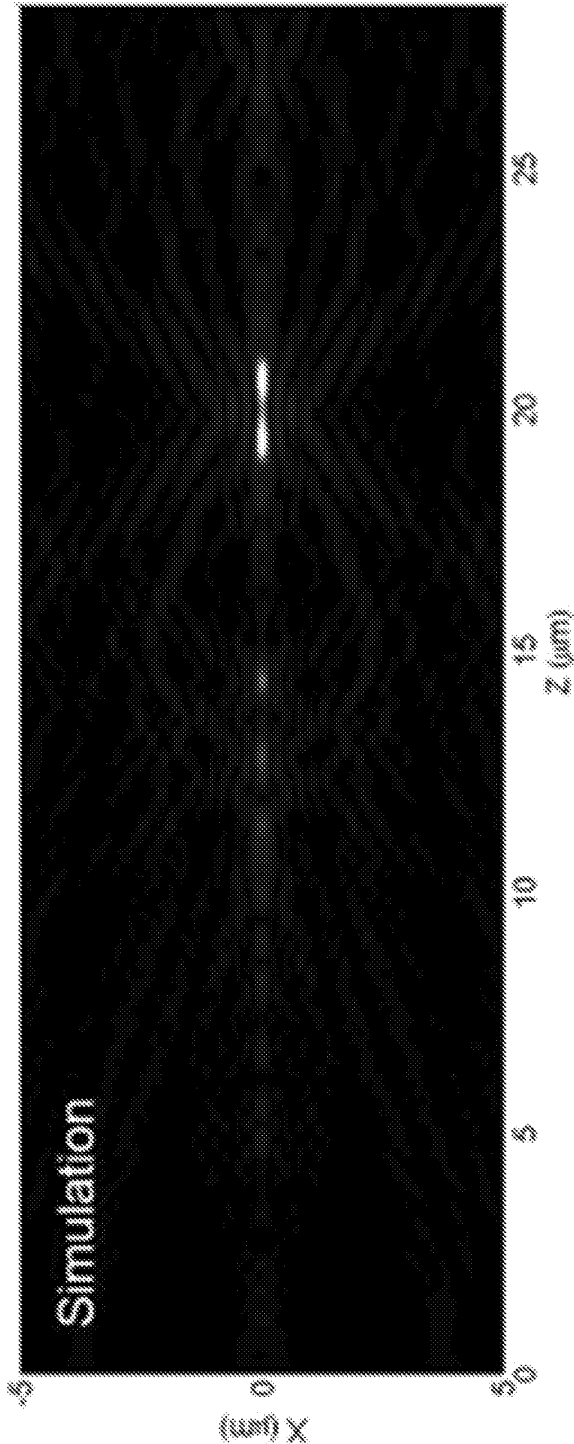


FIG. 6A



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FIG. 6B

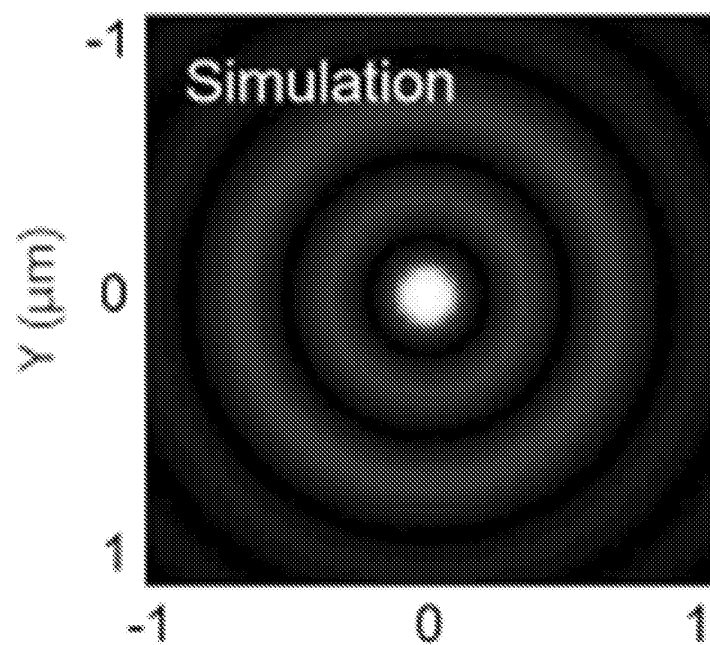
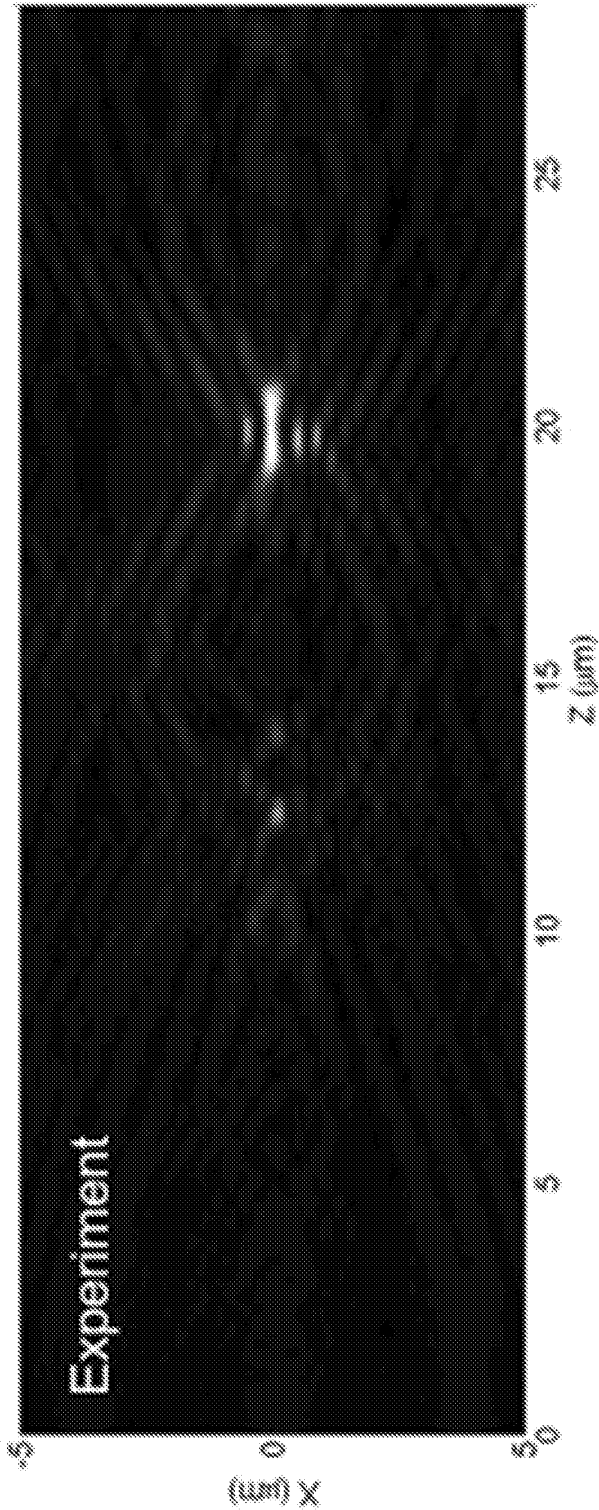
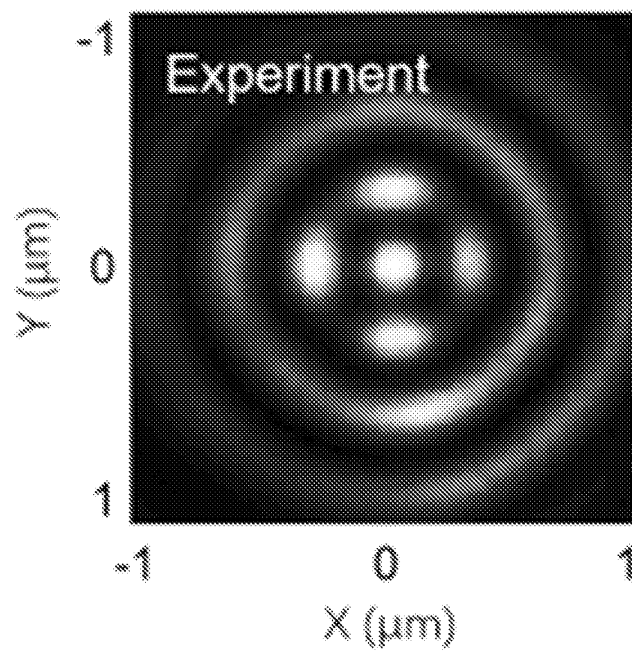


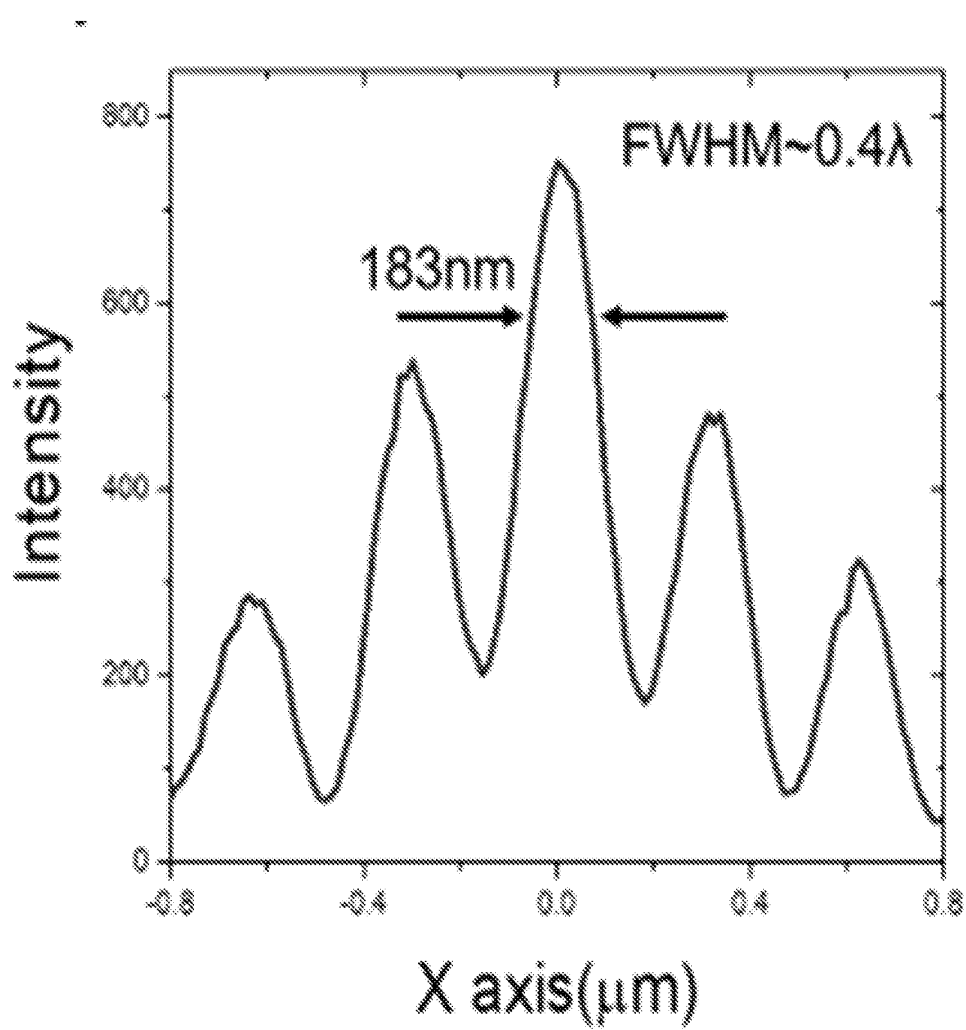
FIG. 6C



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FIG. 6D



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FIG. 6E



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FIG. 7A

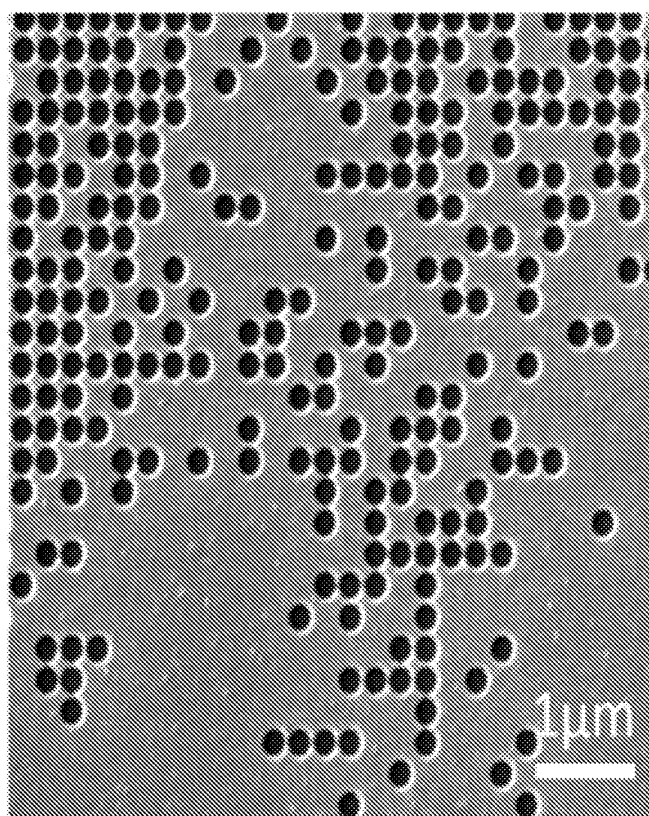
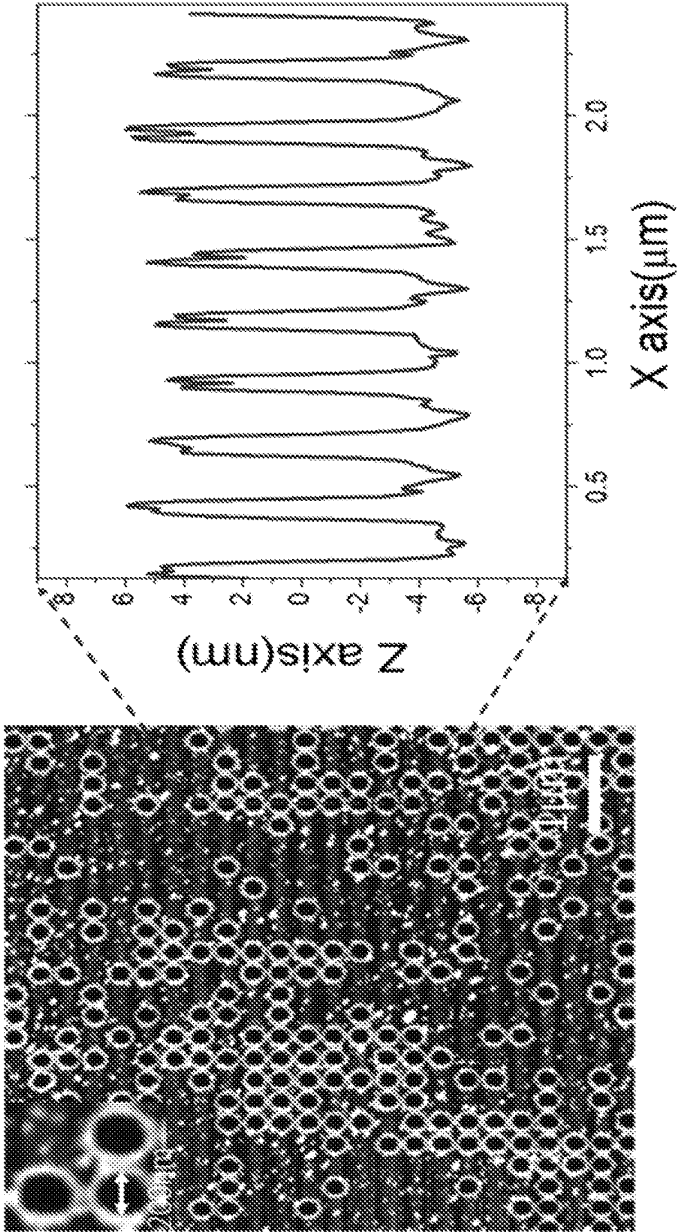
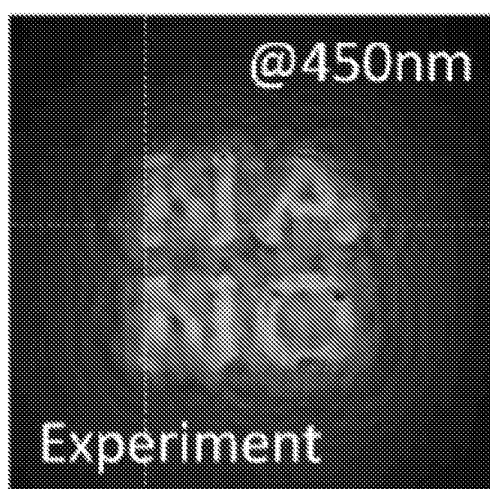


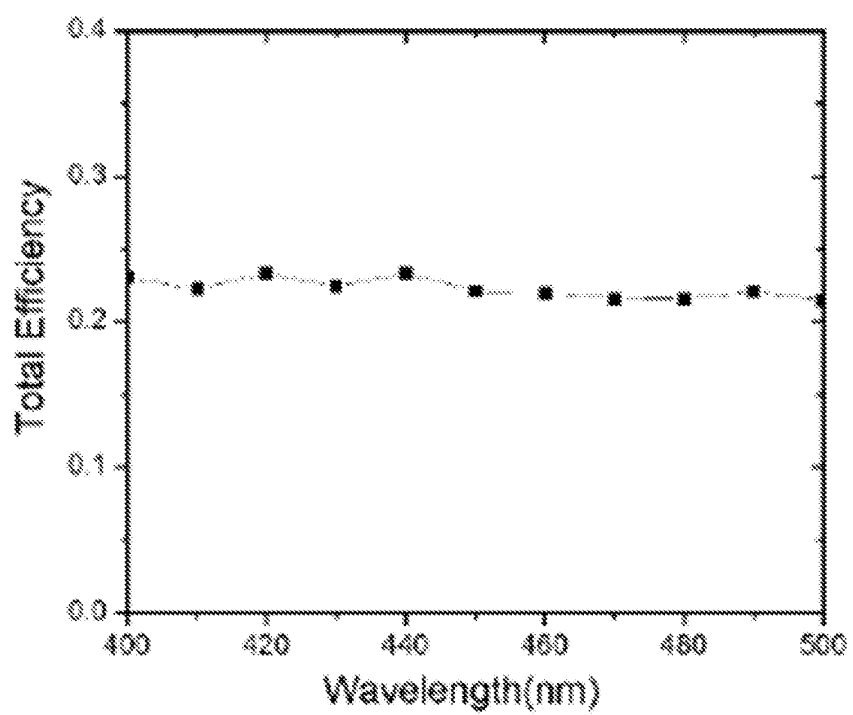
FIG. 7B

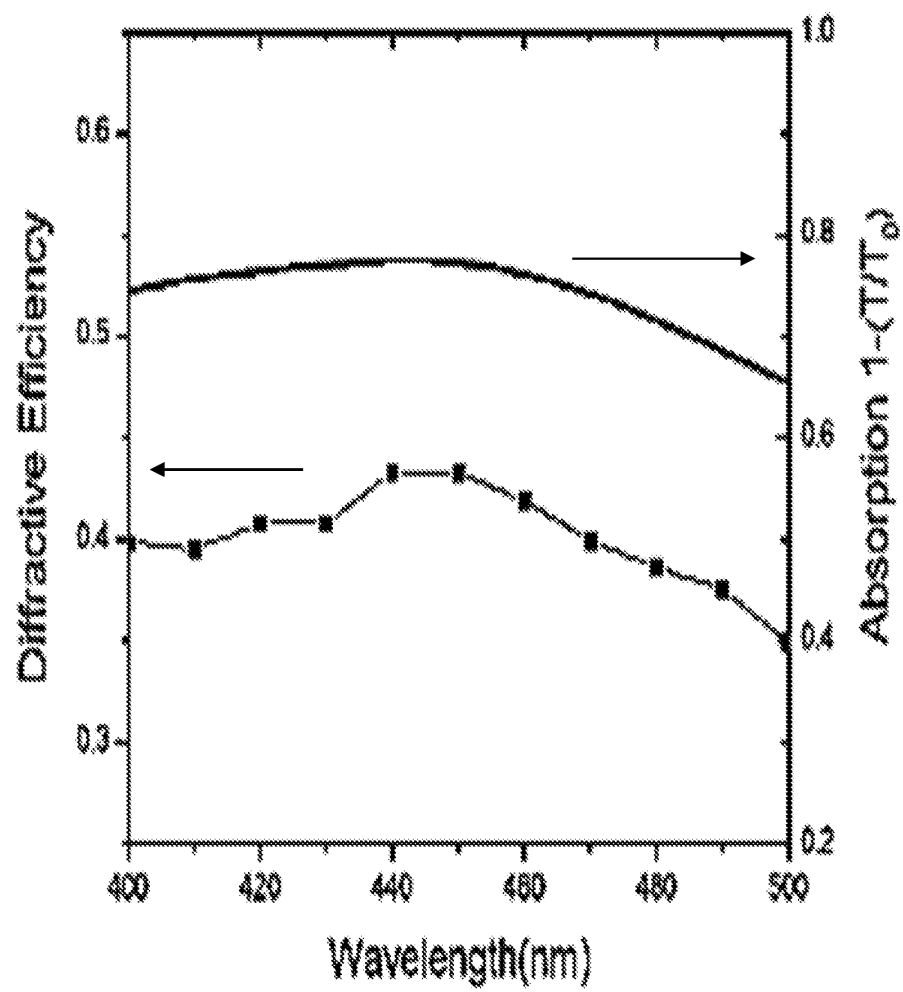


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FIG. 8A



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FIG. 8B



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FIG. 8C

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FIG. 9A

