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When DNA Meets Depletion KUN-TA WU, LANG FENG, PAUL CHAIKIN, Center for Soft Matter Research, Department of Physics, New York University, 4 Washington Place, New York, NY 10003, USA — Depletion is a widely used tool in colloidal particle system for universal attraction. Recently, the rapid development of DNA-coated particles also opens a door to colloidal architecture due to the specificity of DNA hybridization. In our study, we combine these two techniques, depletion and DNA hybridization, in colloidal system and find out that DNA-coated particles in depletion system aggregate faster and have the higher melting temperature than the ones without depletion. We studied quantitatively how the kinetics and thermodynamics of DNA-coated particles are changed with the concentration of depletion and DNA. We also find out that by using the depletion-and-DNA coupled system, particle can form crystals within hours rather than days due to the catalysis effect from depletion. Our study illustrates how DNA and depletion can be used in the same system to create more various and unique systems, which can not be achieved by neither DNA nor depletion along.

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