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Emission energy control of semiconductor quantum dots using phase change material SHOHEI KANAZAWA, YU SATO, ARIYOSHI YAMAMURA, TOSHIHARU SAIKI, Keio Univ — Semiconductor quantum dots have paid much attention as it is a promising candidate for quantum, optical devices, such as quantum computer and quantum dot laser. We propose a local emission energy control method of semiconductor quantum dots using applying strain by volume expansion of phase change material. Phase change material can change its phase crystalline to amorphous, and the volume expand by its phase change. This method can control energy shift direction and amount by amorphous region and depth. Using this method, we matched emission energy of two InAs/InP quantum dots. This achievement can connect to observing superradiance phenomenon and quantum dot coupling effect.

Shohei Kanazawa
Keio Univ

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