Supplementary Material for "Twofold Gain Enhancement by Elongation of QDs in Polarization Preserving QD-SOAs"

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I. Abbreviations

QD	quantum dot
QD-SOA	quantum dot based semiconductor optical amplifier
AR_{h}	horizontal aspect ratio

II. Lifetimes

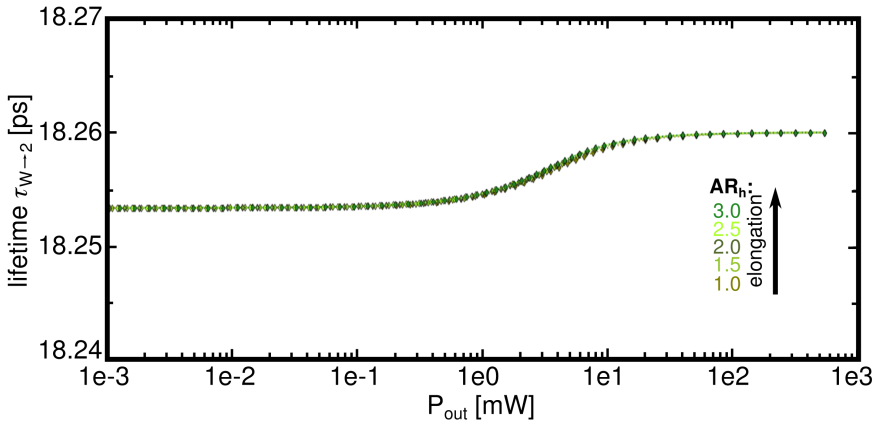

Fig. 1. Lifetime $\tau_{\mathrm{W}\to 2}$ for capture processes, wetting layer into excited QD state, as function of the QD-SOA output power and different QD elongations.

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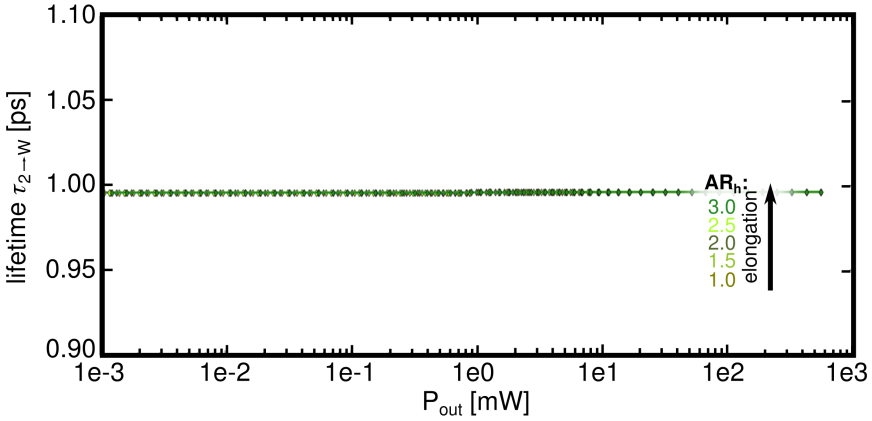

Fig. 2. Lifetime $\tau_{2\rightarrow W}$ for escape processes, excited QD state into wetting layer, as function of the QD-SOA output power and different QD elongations.

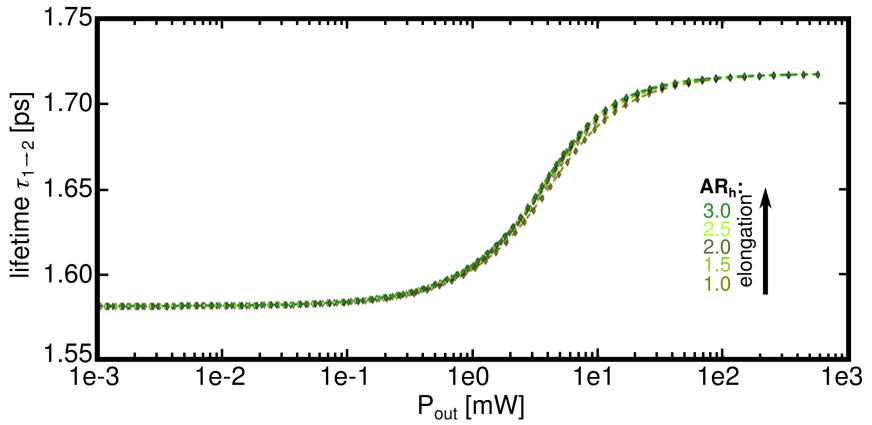

Fig. 3. Lifetime $\tau_{1\rightarrow 2}$ for excitation processes, QD ground state into excited state, as function of the QD-SOA output power and different QD elongations.

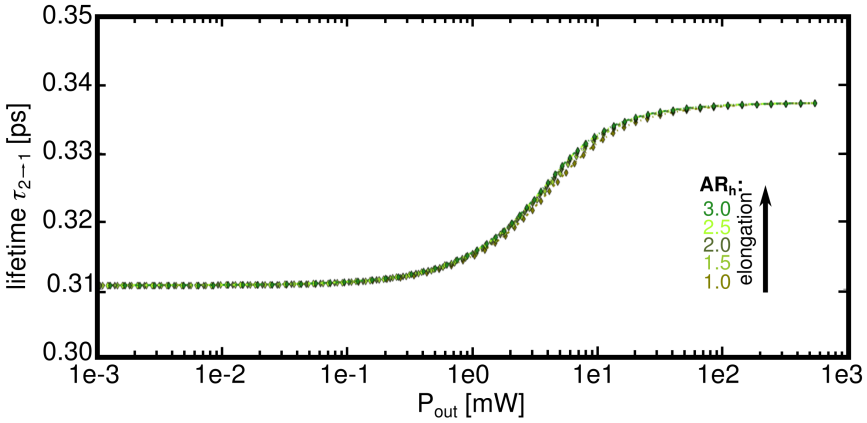

Fig. 4. Lifetime $\tau_{2\to1}$ for relaxation processes, excited QD state into ground state, as function of the QD-SOA output power and different QD elongations.