



Fig. 2: Left: micrograph of a laser neuron with a semiconductor optical amplifier. Left bottom: measured input trace, generated using a Poisson process, and measured output during closed-loop gain. Right: schematic of a hypothetical system with an on-chip passive optical network. N^2 MAC operations are performed, but energy cons. scales with the processor number N .

an inhibitory cluster prevents a pulse from being released. This basic functionality, shown in Fig. 1b, emulates a Leaky Integrate-and-Fire neuron, a Turing-complete spiking model well known in the field of computational neuroscience [6].

The system can scale beyond the tested