

DDS with Sub-second Temporal Release Profile

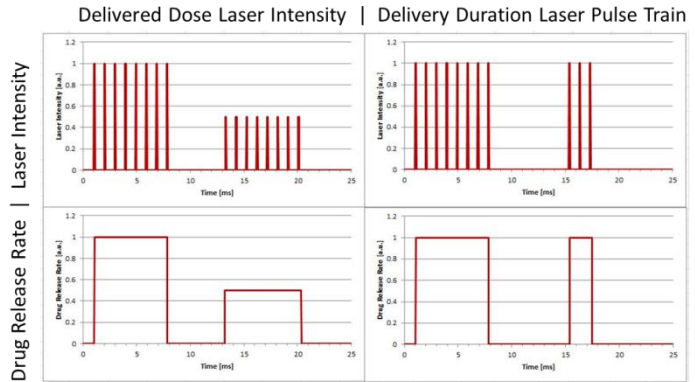
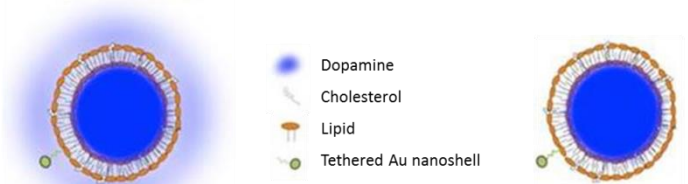
Applications

- Study of Parkinson's disease
- Cancer treatment
- Endocrine disorders

Problem & Solution

In contrast to neuro-transmitters, which are released on sub-second time scales, conventional drugs administered intravenously or orally are released over prolonged periods of time.

This technology encapsulates the drug in liposomes with gold nano-shells tethered to them. The liposomes are introduced into the tissue and irradiated by a femtosecond laser releasing the drug. The delivered dose is determined by the laser intensity, and the temporal profile of the drug release by the pulse train characteristics (see figure).



Upper left shows a liposome that is being irradiated releasing dopamine, the upper right shows the liposome in the normal state (not being irradiated). Graphs on the left show laser intensity and associated drug release rates and those on the right control of duration of drug delivery; all time scales are in ms.

Benefits

- Delivery of neurotransmitters, therapeutic agents, cytokines, antibodies, or hormones
- Controlled sub-second drug delivery
- Liposomes are not damaged

Patent Pending

Keywords

DDS, neurotransmitters, therapeutic agents, cytokines, antibodies, hormones

For more information

Business Development/Technology Licensing Section

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