Contribution ID: **563** Type: **Oral Presentation**

Molecular Transport in Nanoporous Gold Thin Films for Drug Delivery Applications

Wednesday, 1 June 2022 16:15 (15 minutes)

Nanoporous materials have been commonly utilized in drug delivery platforms due to their large specific surface area for higher loading capacity and tunable morphology for controlling drug release profile. In these platforms with large surface area, the interfacial phenomena (surface-molecule interactions) play a significant role in dictating loading capacity and release kinetics. In a collection of works, we use nanoporous gold (np-Au), produced by a nanoscale self-arrangement process, to study the influence of pore morphology, surface chemistry, halide content of the microenvironment, and surface charge on release kinetics and loading capacity for fluorescein (small-molecule drug surrogate). We demonstrate np-Au thin films'utility in releasing biologically-relevant small-molecules to control cell proliferation on np-Au surfaces. We conclude by showing in-plane transport of fluorescein from a distal reservoir to the site of delivery enabling continuous replenishment and release of small molecules. We expect that our investigation of the revealed physical mechanisms will provide a better understanding of the operation of various platforms (e.g., tunable drug delivery, electrochemical biosensors).

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References

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Time Block Preference

Time Block C (18:00-21:00 CET)

Participation

Online

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