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DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY COLLOQUIUM
UTAH STATE UNIVERSITY

*Capturing Molecular Movies of Fluorescent Proteins and Chemical Probes
with Ultrafast Spectroscopy*

Structure and dynamics of condensed phase systems govern their functions which broadly impact biological and materials applications. However, a complete understanding of those processes is hindered by the lack of suitable tools that can resolve atomic motions on molecular timescales. This talk will discuss the emergent tunable femtosecond (a millionth of a billionth of a second) stimulated Raman spectroscopy, aided by femtosecond transient absorption spectroscopy and quantum calculations, enabling us to capture molecular movies during fluorescence and other nonradiative events like never before. Representative examples include the green fluorescent protein (GFP) from jellyfish as a versatile nanomachine that can be engineered to emit from blue to red in various environments and sense calcium ions, a standalone yellow fluorescent protein that can sense chloride, and a GFP-chromophore-derived environment polarity sensor. Such ultrafast findings have propelled us to delineate the excited-state potential energy landscape and rationally design nanomachines with strategic substitutions and novel functions.

4-5PM (MDT) | ESLC, Room 046 | Zoom

<https://usu-edu.zoom.us/j/89128547168?pwd=U0ZEUHN4Y0E2YUIxQ2ZRWXJERW9udz09>

Zoom Meeting ID: 891 2854 7168

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