# IQSE AMO QO Seminar Series

## Tuesday, December 6th, 11:30 am ZOOM & IQSE seminar room (MPHY 578)

Pizza will be served for IQSE members at 11:00 am. The talk will start around 11:30 am

# Dr. Shahriar Esmaeili

## (IQSE TAMU)

## Detection of SARS-CoV-2 cDNA using Förster Resonance Energy Transfer between upconversion and gold nanoparticles

**ABOUT THE SPEAKER:** Shahriar Esmaeili received his BS in physics from the University of Zanjan in Iran in 2012. Shahriar then completed his MS in astrophysics in 2016 at the University of Zanjan in Iran. Shahriar has joined the IQSE and Texas A&M University in 2017, working toward his PhD under a supervision of Profs. Marlan Scully and Philip Hemmer.

**EVENT DETAILS:** I will discuss detection of cDNA from SARS-CoV-2 using upconversion nanoparticles (UCNP) along with Förster resonance energy transfer (FRET). The goal is to determine if this can provide an alternative for the conventional polymerase chain reaction (PCR) approach for early detection of SARS-CoV-2. Nanoparticles have attracted attention in biology and biomedicine to analyze complex biological processes, as well as to track and localize individual drugs, proteins, nucleic acids, and small molecules due to their excellent physical and chemical properties. The exceptional optical properties of lanthanide-doped upconversion nanoparticles (UCNPs) make them among the best fluorescent markers for many promising bioapplications. Preliminary results show quenching efficiency down to 50-100 fM of SARS-CoV-2 target cDNA. We are also beginning to study specificity using DNA sequences with mismatched bases.

**ZOOM information:**

https://tamu.zoom.us/j/98156251523?pwd=QVdSdGxtL1UyY0g1L083SU5QR0QrUT09

Meeting ID: 981 5625 1523
Passcode: 297578

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