

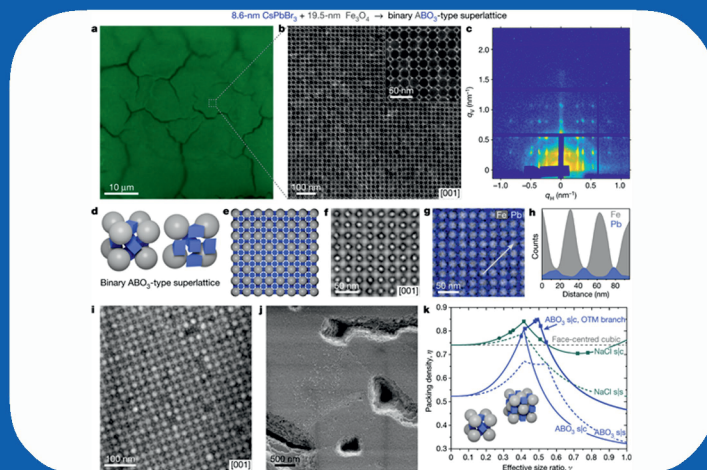
Chemical Sciences Seminar Series

Lead Halide Perovskite Nanocrystals and Their Superfluorescent Superlattices

Virtual Venue: October 27 2022, 19:00 - 20:00 (GMT +3)



Maksym V. Kovalenko
ETH Zurich, Switzerland



Colloidal lead halide perovskite nanocrystals (LHP NCs, formula $APbX_3$, $A=Cs^+$, formamidinium; $X=Cl, Br, I$) exhibit spectrally narrow (<100 meV) fluorescence, spanning the visible spectral range. Owing to the high oscillator strength, long coherence times of up to 80 ps and minimal inhomogeneous broadening of emission lines, these NCs make for a highly versatile platform for creating controlled, aggregated states exhibiting collective phenomena. Long-range ordered superlattices (SLs) of these NCs exhibit sharp red-shifted lines in their emission spectra and superfluorescence. Binary and ternary NC SLs can be obtained by a shape-directed co-assembly of $CsPbBr_3$ nanocubes with spherical dielectric NCs. These mesostructures exhibit superfluorescence, characterized, at high excitation density, by emission pulses with ultrafast (22 ps) radiative decay and Burnham-Chiao ringing behaviour with a strongly accelerated build-up time. Far greater structural space, beyond the realm of known lattices, is anticipated from combining NCs of various shapes. Here, we present also on the co-assembly of steric-stabilized $CsPbBr_3$ nanocubes with disk-shaped LaF_3 NCs into binary SLs, yielding six columnar structures with AB, AB₂, AB₄, and AB₆ stoichiometry, and several other structures not observed in all-spherical NC assemblies.

TÜBİTAK-Temel Bilimler Araştırma Enstitüsü (TBAE)

İlham Verici Çevrimiçi Seminerler Serisi

Gebze, TÜRKİYE

Bugün ne yazık ki ülkemizde ve dünyada Covid-19 koronavirüs salgını halen devam etmektedir. Bu durumun bilimsel çalışmalara ve bilim tabanlı süreçlere olumsuz etkilerini hafifletmek amacıyla, TBAE temel bilimin çeşitli dallarında ve disiplinler arası alanlarda uluslararası düzeyde ilham verici Çevrimiçi Seminerler Serisi düzenlemektedir. Bu kapsamda;

- 1) İsviçre Federal Teknoloji Enstitüsü'nden (ETH Zürih, İsviçre) Prof. Dr. Maksym V. Kovalenko "*Kurşun Halojenür Perovskit Nanokristalleri ve Süperfloresans Süper Örgüleri*" başlıklı bir konuşma yapacaktır.

TBAE'nin Kimya Bilimleri Seminer Serisi kapsamında yapılacak olan bu konuşma, 27 Ekim 2022 tarihinde, saat 19:00 – 20:00 (GMT +3) arasında Zoom Platformu üzerinden gerçekleştirilecektir.

NOT: Zoom bağlantısı bilgisi katılım için başvuru yapanlara gönderilecektir.

Web Sitesi: <https://tbae.tubitak.gov.tr/tr/haber/kursun-halojenur-perovskit-nanokristalleri-ve-superfloresans-super-orguleri>

TÜBİTAK-Research Institute for Fundamental Sciences (TBAE)

Inspiring Online Seminars Series

Gebze, TURKEY

It is very unfortunate that the Covid-19 coronavirus outbreak still continues in the world. In order to mitigate the negative impacts of this situation on scientific thoughts, TBAE organizes inspiring Online Seminar Series for national and international audiences in various branches of fundamental science as well as interdisciplinary areas.

As part of the Chemical Sciences Seminar Series of TBAE, Prof. Dr. Maksym V. Kovalenko from the Swiss Federal Institute of Technology (ETH Zürih, Switzerland) will give a talk entitled "*Lead Halide Perovskite Nanocrystals and Their Superfluorescent Superlattices*".

The talk will be held on October 27 2022, 19:00 – 20:00 (GMT +3) via Zoom platform.

Note: The Zoom link information will be sent only to applicants.

Web Site: <https://tbae.tubitak.gov.tr/en/haber/lead-halide-perovskite-nanocrystals-and-their-superfluorescent-superlattices>