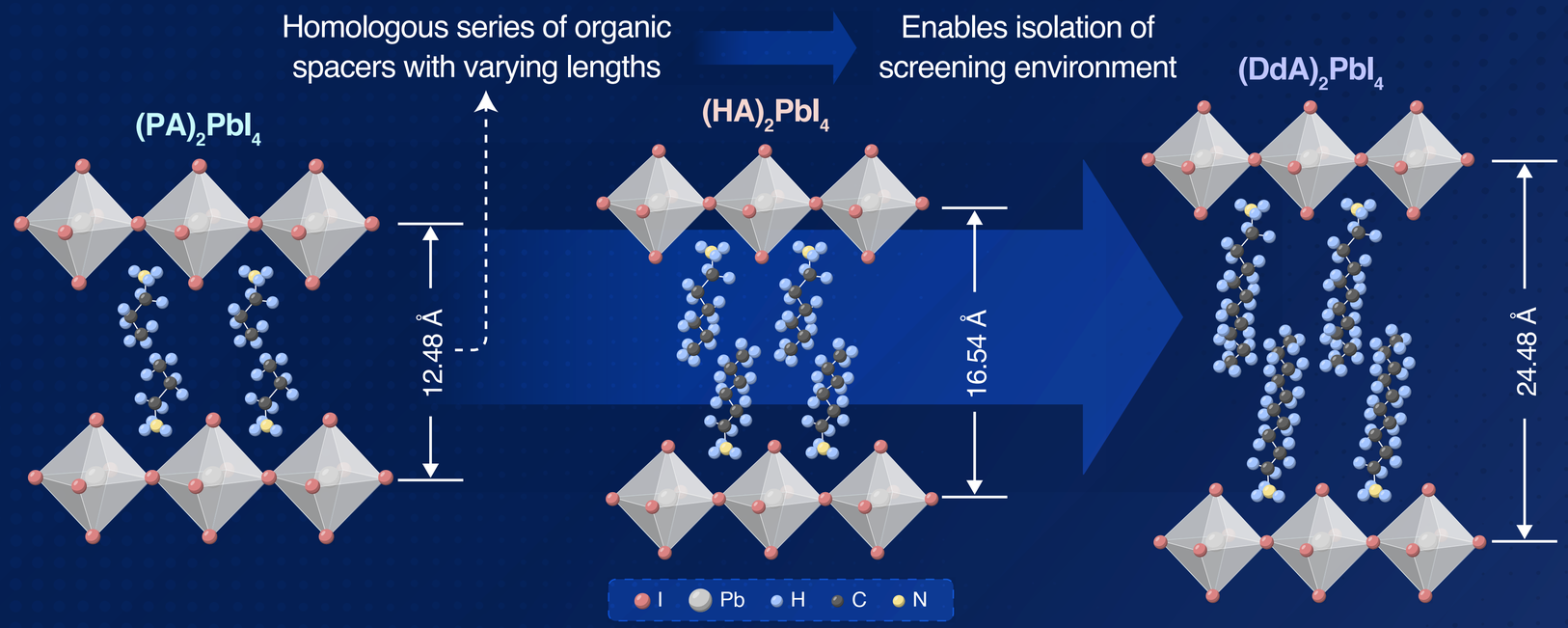
A Framework for Predicting Excitonic Properties of Two-Dimensional (2D) Perovskites

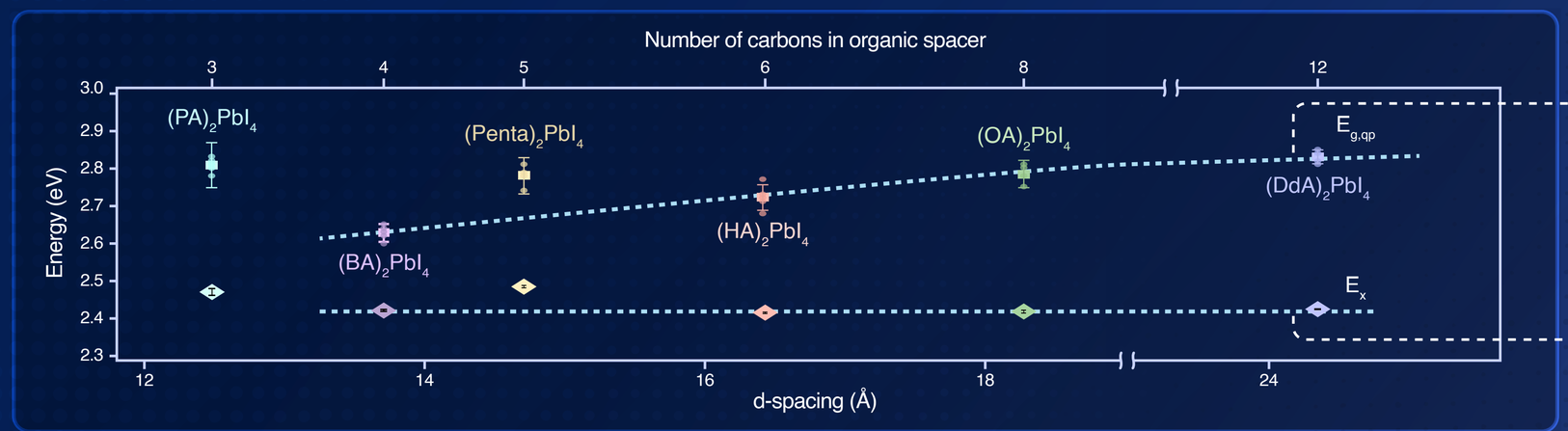
In 2D perovskites, the impact of screening environment on excitonic properties remains poorly understood

High-quality 2D lead-iodide (Pb-I-Pb) perovskite thin films

Homologous series of organic spacers with varying lengths

Enables isolation of screening environment





- Exciton binding energy increases with organic spacer length
- Effect of screening environment predictable using modified Keldysh framework with a spatially averaged phenomenological dielectric constant (ε_{ph})
- Exciton binding energy is inversely proportional to ε_{ph}

Quasiparticle bandgap increasing with organic spacer length

Constant exciton energies

Exciton Binding Energy Modulation in 2D Perovskites: A Phenomenological Keldysh Framework
Kim *et al.* (2026) | *Advanced Functional Materials* | DOI: 10.1002/adfm.202520461

HANBAT NATIONAL UNIVERSITY