



An Joint Research Program on

Emergent Behavior in Novel Architectured Complex Materials: Engineering at the Atomic Scale

The scientific community has been excited by the discovery of exotic functionality displayed by many transition metal compounds (TMCs). “The challenge is to understand how novel phenomena emerge, discover new ones, and to determine which microscopic details are important and which are essential.” The capability of artificially structuring TMCs opens a new vista for exploring emergent behavior in these materials—beyond mother nature. A new program will be initiated at IOP in Beijing to take advantage to the opportunities associated with artificially structured TMCs—in collaboration with Louisiana State University (LSU).

The new program will build upon the State Key Laboratory for Surface Physics in the Institute of Physics, Beijing, China. This program will bring together a group of researchers and visitors with a multidisciplinary background to discover new functionality and to learn how to control it — **materials by design**. In essence we will aim to combine two of the grand challenges—*Complexity and Nano-structured materials* to explore and exploit emergent behavior through advanced material growth and nanoscale-lithography fabrication, combined with comprehensive characterization on the atomic scale.

We are searching for three academic positions all with long-term appointments at IOP, sizable start up, and with affiliations at LSU. The focus will be on growth of thin films, surface or interface characterization, and nano-fabrication. Applicants should have a Ph.D, a demonstrated research track record, the ability to work with in a team, and will be expected to advise graduate students, especially those associated with the Dual-Degree program between LSU and IOP. We will accept applicants at all levels of experience.

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