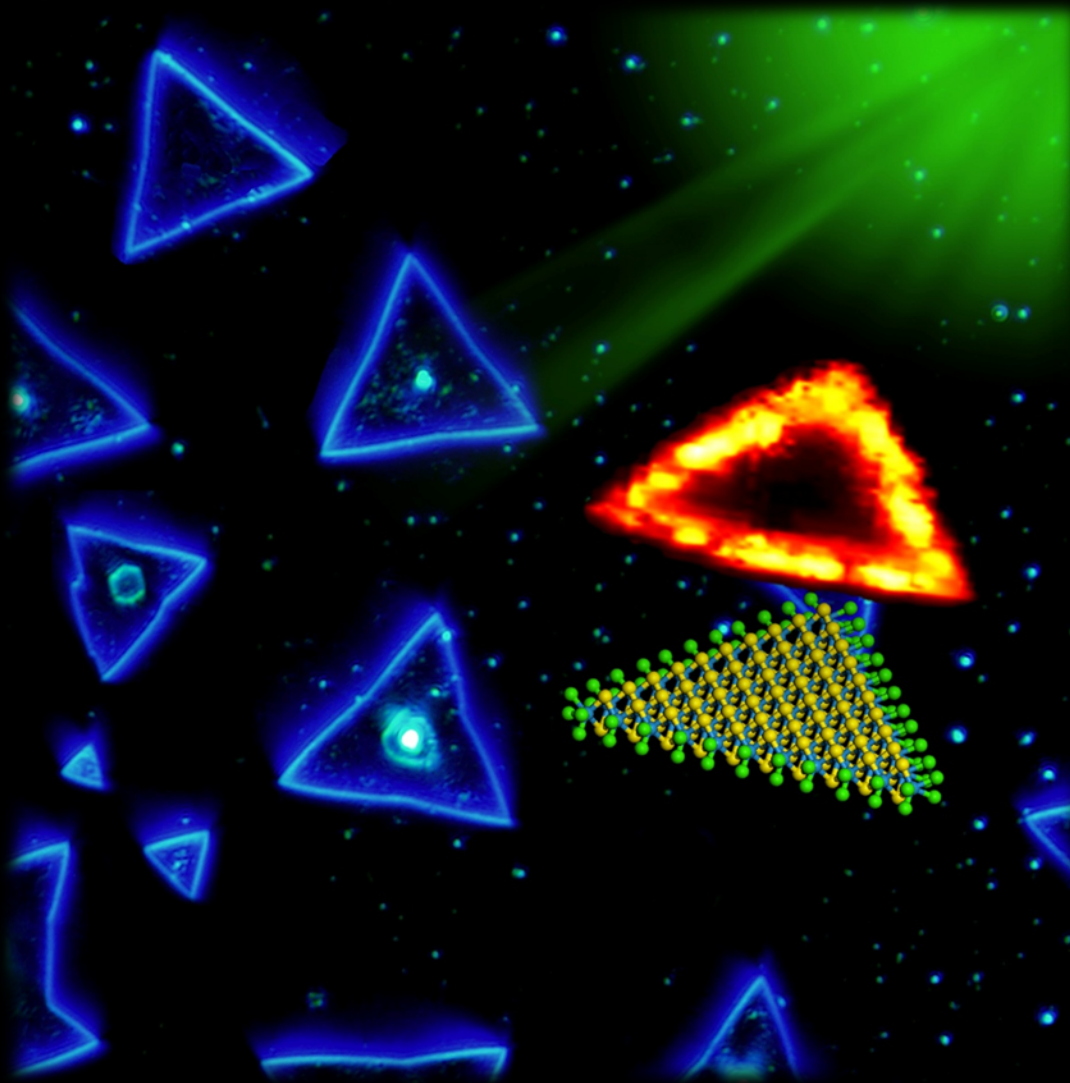


Light-Emitting Triangles for Applications in Optical Technology



DMR-0820404: H. R. Gutierrez, N. Perea-Lopez, A.-L. Elias, A. Berkdemir, B. Wang, Ruitao Lv, F. Lopez-Urias, V. H. Crespi, H. Terrones and M. Terrones. Extraordinary Room-Temperature Photoluminescence in Triangular WS_2 Monolayers. *Nanoletters*, dx.doi.org/10.1021/nl3026357 (2013)



For the first time, MRSEC researchers have created single layers of a naturally occurring rare mineral called tungstenite or WS_2 . The resulting sheets of stacked sulfur and tungsten atoms forms honeycomb patterns within triangular islands that have unusual light-emitting (photoluminescent) properties. These triangular structures could have many potential applications in optical light detection, light-emitting diodes, and lasers. MRSEC researchers plan to use this chemical-vapor-deposition technology to grow innovative monolayers from other layered materials, such as molybdenum diselenide ($MoSe_2$), niobium diselenide (NbS_2), tungsten diselenide (WSe_2), and others.