



The NEMS and Nano-Materials Laboratory, led by Professor Ya'akovovitz from the Faculty of Engineering Sciences, Ben-Gurion University of the Negev (Israel), focused on investigating the physical properties of novel nano-materials and the development of new applications incorporating these materials.

Strain engineering of the mechanical properties of two-dimensional WS_2

Tuning the physical properties of 2D materials is crucial for their successful integration into advanced applications. Here we modulate the mechanical properties of 2D tungsten disulfide (WS_2) through compressive strain applied *via* the buckling metrology, which demonstrated mechanical softening manifested by the reduction of its effective Young's modulus. Raman analysis also showed strain-dependent vibrational modes softening, while atomistic simulations confirmed that due to sequential atomic-scale buckling events in compressed WS_2 , it shows a mechanical softening. We, therefore, shed light on the fundamental mechanics of 2D materials.

As featured in:



See Assaf Ya'akovovitz *et al.*,
Nanoscale Adv., 2024, 6, 4062.