

Two-dimensional empty space and its unique properties

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I provide an overview of our recent work on atomic-scale cavities fabricated by van der Waals assembly of 2D crystals. These ultimately narrow structures can be viewed as if an individual atomic plane were extracted from a bulk crystal leaving behind a 2D empty space, essentially an angstrom-size gap connecting two edge dislocations. Gas, liquid, ion and proton transport have been studied using such 2D cavities down to one atom in height, revealing many interesting and sometimes counterintuitive properties.