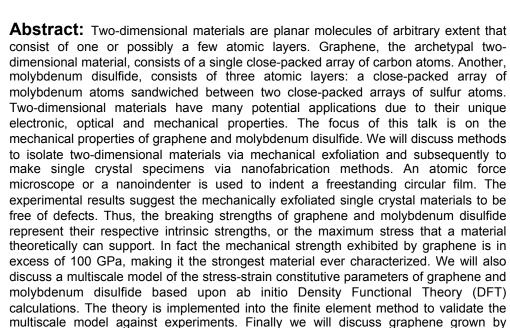
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Two-Dimensional Materials: Mechanical Stiffness, Strength and Reliability



strength of defect-free single crystal graphene.

Biography: Jeffrey W. Kysar is a Professor of Mechanical Engineering at Columbia University. He received his B.S. degree from Kansas State University and his Ph.D. from Harvard University. He has been a visiting professor at the École Nationale Supérieure des Mines de Paris. His current research interests are in the field of mechanical properties of small-scale materials from a combined experimental, computational and analytical perspective. Recent projects by his research group include: experimental characterization and theoretical development of the non-linear elastic properties of graphene and other monatomic thin film materials such as molybdenum disulfide; fabrication of crack-free blanket films of nanoporous gold onto silicon wafers for incorporation into micro-electro-mechanical systems (MEMS); fundamental study of the deformation mechanisms of monazite (lanthanum phosphate) which is a ceramic that deforms plastically; as well as the development of novel methods to characterize the spatial variation of material defects within metals that are deformed plastically. In 2012 he received the International Journal of Plasticity Young Researcher Award. In 2010 Science Watch recognized him and his coauthors for "the most-cited chemistry report published in the last two years, excluding reviews". In 2006, he received the Presidential Early Career Award for Scientists and Engineers (PECASE) at the White House. That same year he also was awarded the Early Career Scientist and Engineer Award from the Department of Energy (DOE) Office of Defense Programs. In 2001 he received the Faculty Early Career Development (CAREER) Award from the National Science Foundation.

Chemical Vapor Deposition (CVD) using industrially scalable processes. The CVD

grown graphene is polycrystalline, yet upon optimization of the CVD parameters, the strength of the polycrystalline graphene can achieve a very high fraction of the intrinsic



Jeffrey W. Kysar

Professor
Department
of Mechanical
Engineering
Columbia University
New York, NY 10027