

# Environmental Science journals

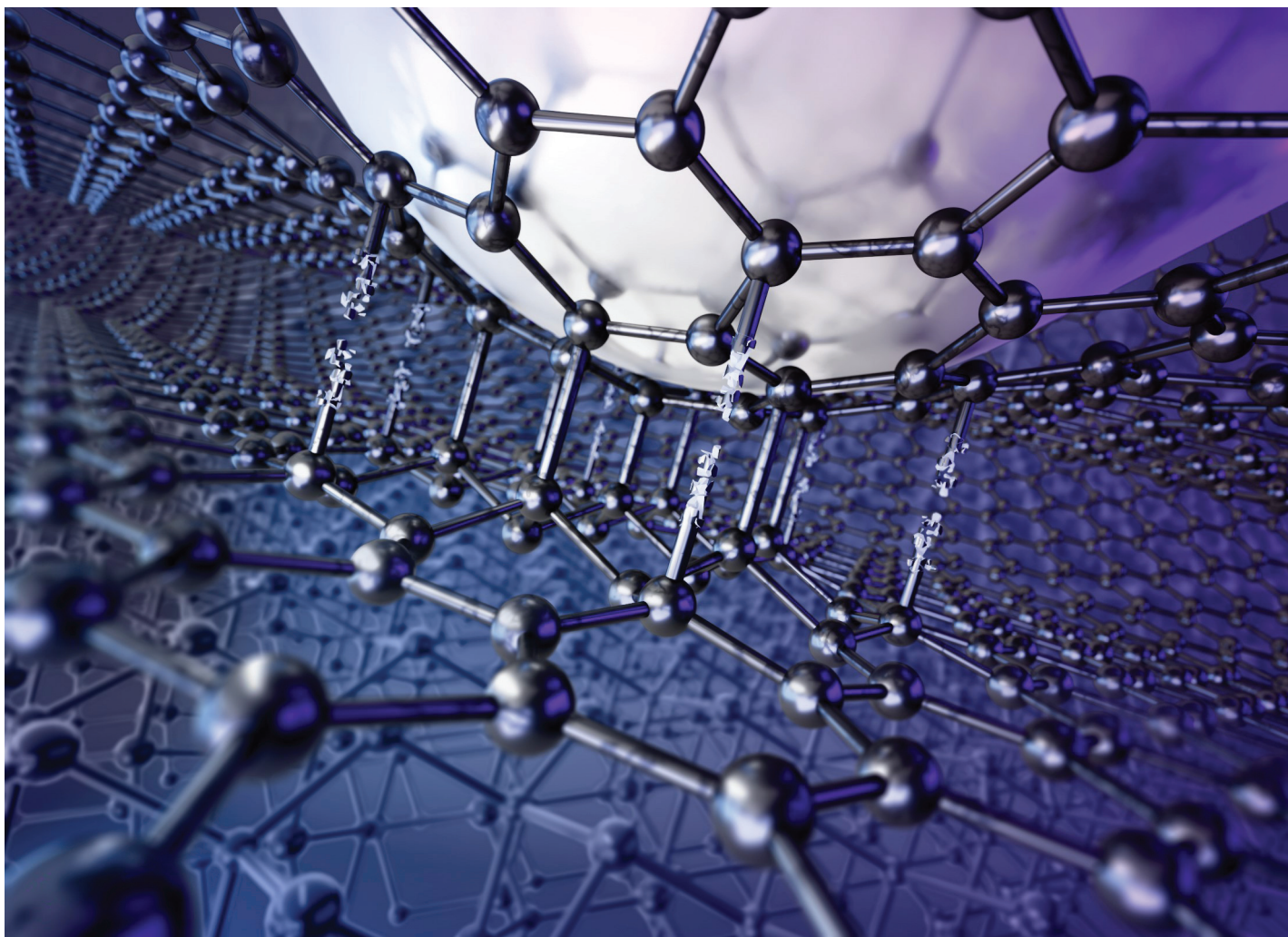
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Fundamental questions  
Elemental answers





Showcasing research from Dr. Rejhon's group at Institute of Physics, Faculty of Mathematics and Physics, Charles University, and Prof. Riedo's group at Tandon School of Engineering, New York University.

Impact of metastable graphene-diamond coatings on the fracture toughness of silicon carbide

The impact of graphene on the mechanical properties of SiC is investigated. Our findings show an increase in hardness and fracture toughness in graphene-coated SiC, even for indentation depths of 10  $\mu\text{m}$ , compared to bare SiC. The observations are explained by a pressure-induced  $\text{sp}^2$ -to- $\text{sp}^3$  phase transition of graphene into diamond phase called diamene. This opens new venues for new graphene-coated SiC applications in various industries and high-impact protective coatings.

As featured in:



See Martin Rejhon, Elisa Riedo *et al.*, *Nanoscale*, 2024, **16**, 10590.