

# Ultrananocrystalline Diamond, Second Edition: Synthesis, Properties and Applications (Micro and Nano Technologies)

Olga A. Shenderova, Dieter M. Gruen



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Ultrananocrystalline Diamond: Synthesis, Properties, and Applications is a unique practical reference handbook. Written by the leading experts worldwide it introduces the science of UNCD for both the R&D community and applications developers using UNCD in a diverse range of applications from macro to nanodevices, such as energy-saving ultra-low friction and wear coatings for mechanical pump seals and tools, high-performance MEMS/NEMS-based systems (e.g. in telecommunications), the next generation of high-definition flat panel displays, in-vivo biomedical implants, and biosensors.

This work brings together the basic science of nanoscale diamond structures, with detailed information on ultra-nanodiamond synthesis, properties, and applications. The book offers discussion on UNCD in its two forms, as a powder and as a chemical vapor deposited film. Also discussed are the superior mechanical, tribological, transport, electrochemical, and electron emission properties of UNCD for a wide range of applications including MEMS/ NEMS, surface acoustic wave (SAW) devices, electrochemical sensors, coatings for field emission arrays, photonic and RF switching, biosensors, and neural prostheses, etc.

- Ultrananocrystalline Diamond summarises the most recent developments in the nanodiamond field, and presents them in a way that will be useful to the R&D community in both academic and corporate sectors.
- Coverage of both nanodiamond particles and films make this a valuable resource for both the nanotechnology community and the field of thin films / vacuum deposition.
- Written by the world's leading experts in nanodiamond, this second edition builds on its predecessor's reputation as the most up-to-date resource in the field.

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