



AAPPS-DPP 2018 Plenary speaker Name: Prof. Ken (Kostya) Ostrikov

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Rationale: Ken is a recognized leader in applied plasma physics, in particular in plasma nanoscience. In this lecture, he will present results from recent breakthrough work published in very high-impact journals and point to exciting new directions for applied plasma research. Ken is known for his ability to anticipate fertile research areas, and to present his ideas in a dynamic and exciting manner. This captures the interest of the audience, and promotes these new directions. It is certain that Ken's presentation would be one of the high points of the conference

Talk Title: Shrinking the plasma: why not use pores?

Short abstract: This presentation will clarify a distinctive set of fundamental questions of plasma nanoscience, specifically about shrinking plasmas to micro- and nanoscales [1] and using ion beams to shrink nanometre-sized pores in a brittle ceramic material to unprecedentedly small sizes, making the ceramic plastic and without breaking it [2]. I will discuss how plasma, thermal, ionic and other processes can be used to control macroscopic properties of materials by precise manipulations of atomic bonds, atoms and defects at nanoscales. The arising opportunities for industrial applications [3,4], and the challenges and cross-disciplinary platforms such as plasma-materials informatics will be discussed.

List of related published papers

[1] K. Ostrikov, F. Beg, and A. Ng, Colloquium: Nanoplasmas generated by intense radiation, *Rev. Mod. Phys.* 88, 011001 (2016)

[2] M. Aramesh, Y. Mayamei, A. Wolf, K. Ostrikov, *Nature Comm.* DOI: 10.1038/s41467-018-03316-7 (2018). Embargoed till 8 pm 26/02/2018 AEST

[3] D. H. Seo, ..., and K. Ostrikov, Single-step ambient-air synthesis of graphene from renewable precursors as electrochemical genosensor, *Nature Comm.* 8, 14217 (2017);

[4] D. H. Seo, ..., and K. Ostrikov Anti-fouling graphene-based membranes for effective water desalination, *Nature Comm.* 9, 683 (2018).