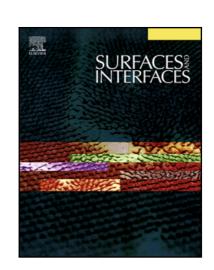
### Accepted Manuscript

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## Thermal radiative characteristics of nanostructured tungsten at high-temperature

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#### Abstract

Fiber-form nanostructures grown on tungsten (W) surfaces with helium (He) plasma irradiation exhibit an excellent thermal radiative property at low sample temperatures up to 1200 °C. To maintain this radiative property at higher temperatures, the recovery to undefected surface and annealing effect of nanostructured W surfaces need to be investigated while focusing on the dopant effect. TFGR-W-1.1%TiC/H (toughing, fine-grained recrystallized tungsten with TiC dispersoids) was experimentally found to have the best characteristics among the tested doped W samples. However, it was noted and discussed that a further improvement at higher temperatures needs an additional surface treatment. Possibilities of maintaining complicated structures with nano-scale lengths are discussed in terms of dopant pinning effect and self-diffusion on tungsten surface.

Keyword: nanostructure, tungsten, black-body radiation, dopant effect PACS: 52,40.Hf, 68.55.J-a, 81.07-b

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