



浙江大學聚變理論與模擬中心  
潘雲鶴

**Institute for Fusion Theory and Simulation, Zhejiang University**

Address: Hangzhou, 310027, P.R. China

Website: <http://ifts.zju.edu.cn>

Tel: +86-15858135171

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**Comments on the Abstract of the thesis entitled  
“Dusty plasma in afterglow regime and formation of carbon nanotubes in plasma”  
by G.P. Burmaka, who is applying for the Candidate Science Degree in Plasma Physics**

In Mr. Burmaka's thesis, the properties of a dusty plasma in the afterglow regime and the formation of forest of single-walled carbon nanotubes in plasma are investigated. The studies have been carried out in order to explain some interesting experimental results from the Ruhr-University Bochum in Germany. It is shown that generation of electrons in metastable collisions regime can significantly affect the electron density in afterglow dusty plasmas. Secondary emission from ion-electrode collisions can also change the electron density: increasing it by a few tens percent. Mr. Burmaka also developed two analytical models to describe the growth of forest of single-walled carbon nanotubes (SWCNT) in plasma-enhanced chemical vapour deposition with inhomogeneous deposition of fluxes of neutral particles and ions on the nanotube surfaces. It is shown that the nanotubes are longer if they are grown in the presence of plasma, compared to the case without plasma. The effect of plasma ions and neutrals deposited on the SWCNTs on the nanotube growth are also analysed. Mr. Burmaka carried out his studies both analytically as well as numerically. His results are compared with the experimental results from Japan and Germany, and they are found to be in good agreement.

The research work presented in the thesis is actual, interesting and novel in the field of dusty plasma as well as nanostructure formation in plasma environment. They have been published in Ukrainian and international (especially plasma) physics journals. Five papers are in Scopus and two of them are in journals with high ( $>2$ ) impact factor. Mr. Burmaka has also presented his results on several international conferences.

Accordingly, I strongly support the application of Mr. Burmaka for the Candidate of Science Degree in Plasma Physics in Ukraine.

Ming Y. Yu, Professor  
Institute for Fusion Theory and Simulation  
Zhejiang University, Hangzhou 310027, China

Institute for Theoretical Physics I,  
Ruhr University, D-44780 Bochum, Germany

Email: [myyu@zju.edu.cn](mailto:myyu@zju.edu.cn), [ming.yu@rub.de](mailto:ming.yu@rub.de)