

# HiPIMS Deposition of Tungsten Trioxide Thin Films.

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## Introduction

Tungsten oxide is well known for its electrochromic and photocatalytic properties. In this study we are trying to understand HiPIMS influence on tungsten oxide thin film in a matter of its further use of the properties mentioned above. While it is known that HiPIMS gives more dense amorphous films, as well as a significant drop in deposition rates [1], also other properties show significant differences comparing to the DCMS films.

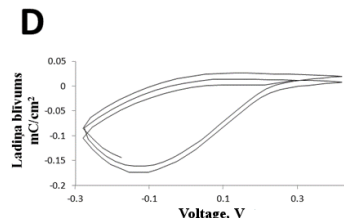
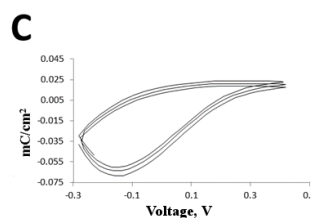
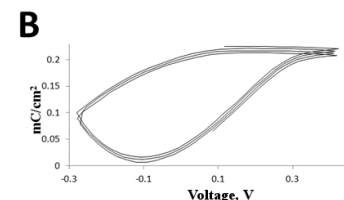
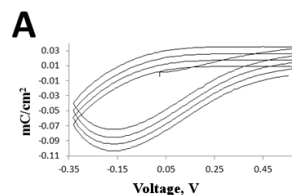
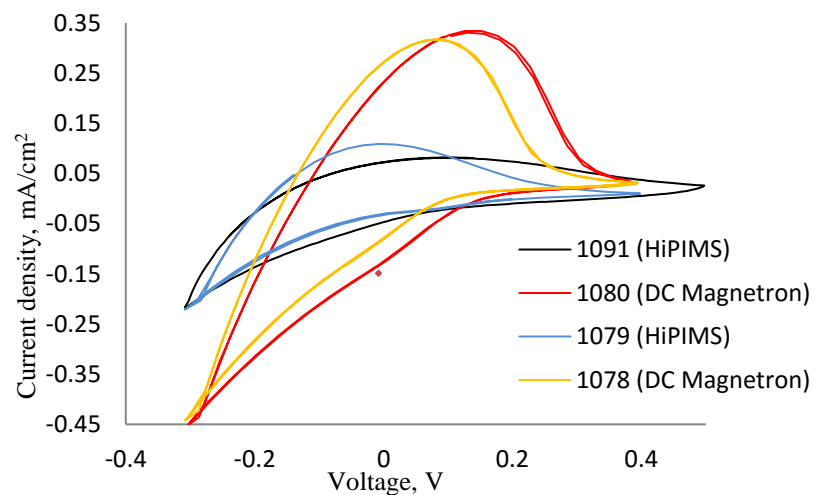
## Experimental details

Sample ID	Charge Intr. (mC/cm <sup>2</sup> )	Charge Drained (mC/cm <sup>2</sup> )	Difference (mC/cm <sup>2</sup> )
1091 (A) HiPIMS	0.1195	0.1093	0.01
1080 (B) DCMS	0.2067	0.2050	0.0017
1079 (C) HiPIMS	0.07893	0.07892	0.00001
1078 (D) DCMS	0.18237	0.17067	0.0117

## Conclusions

Both films showed good electrochromic properties, but it needs to be said that films sputtered in DCMS showed better abilities to colorize themselves. Films which are introduced in this study are achieved by traditional method of sputtering while heating the substrate, but we are looking forward to possibility of achieving crystalline films with cold sputtering.

## Results



## References

[1] Axel Hemberg, Jean-Pierre Dauchot, Rony Snyder, Stephanos Konstantinidis, J. Vac. Sci. Technol. A30(4), Jul/Aug 2012



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