

Abstract Submitted  
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**Properties of  $\text{Ti}_8\text{C}_5$  thin films created at different temperatures using magnetron sputtering** CHRISTOPHER ROTELLA, JEFFREY HETTINGER, EMMA CORTES, SAMUEL LOFLAND, Rowan University Department of Physics and Astronomy, MIN HEON, Drexel University Department of Materials Science, CARL LUNK, Rowan University Department of Physics and Astronomy — We were able to create thin films of  $\text{Ti}_8\text{C}_5$  on c-axis oriented single crystal  $\text{Al}_2\text{O}_3$  using both co-deposition magnetron sputtering and reactive magnetron sputtering. While  $\text{TiC}$  is generally used as a precursor film when making “on-chip” super capacitors,  $\text{Ti}_8\text{C}_5$  is of similar composition and may have some advantages when making super capacitors. The  $\text{Ti}_8\text{C}_5$  is more porous and demonstrates slightly different properties than  $\text{TiC}$ . Film deposition was optimized using elemental composition data obtained by WDXRF and characterized using XRD. It was found that composition and phase of  $\text{Ti}_8\text{C}_5$  greatly depended on the temperatures at which the samples were grown. We outline the different parameters at which  $\text{Ti}_8\text{C}_5$  grows best by outlining features of the Ti-C phase diagram.

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