

Abstract Submitted  
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**Graphene-based**

**Sil-**

**ica Composite Thin Films** SUPINDA WATCHAROTONE, DMITRIY DIKIN, SASHA STANKOVICH, RICHARD PINER, GEOFFREY DOMMETT, INHWA JUNG, GUENNADI EVMENENKO, RODNEY RUOFF, Northwestern University, Evanston, Illinois, SHANG-EN WU, SHU-FANG CHEN, CHUAN-PU LIU, National Cheng Kung University, Tainan, Taiwan — Very thin, smooth, transparent, and electrically conductive silica films with embedded graphene-based sheets were fabricated via the sol-gel route. Individual ‘graphene oxide’ sheets exfoliated in water were incorporated into silica sols. Composite films were formed by spin coating and rendered conductive by treatment with hydrazine, followed by curing at 400 ° C under nitrogen flow. The films were studied by SEM, AFM, TEM, X-ray reflectivity, XPS, UV-Vis spectroscopy, and the electrical conductivity was measured. Transparent and conductive thin silica composite films approximately 30 nm thick were fabricated on glass and silicon substrates, opening up new possibilities for making glassy materials with moderate conductivity and high optical transparency. Support from NASA (#NCC-1-02037) through the University Research, Engineering and Technology Institute on Bio-inspired Materials and the NSF (#CMS-0510212) is appreciated.

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