



Speech subject : Photo-patternable High-RI TiOx Spin-on Materials for Silicon Photonics

Applications

Speech leader: Chen Wei-Su, Deputy General Manager, Quantech (Guangzhou) New Materials Co., LTD

Speech Description/Objective:

Most metal oxides have high refractive index which is essentially interested in silicon photonics applications. Titanium oxide metal-organic solution was produced for silicon photonics applications like nano plasmonic waveguide, microlens, high-RI capping, light distributed patterns and so on. The titanium oxide is manufactured with absolute ethyl alcohol, specific titanium liquid source, catalyzed by hydrochloric acid, some surfactants and stirred for several hours. The obtained TiOx was spun on with 1500-3000 rpm and cured in nitrogen gas purged furnace at 300oC. Cured ultra-thin TiOx thickness is around 26-34nm while the thicker TiOx is ~300nm thickness range. The refractive index of this spin-on TiOx is 2.11. This high refractive index is appreciated for using in silicon photonics applications.

Speech Outline:

1. Introduce the application of Ultrahigh-RI TiOx SO-mHM,
2. Ultrahigh-RI SO-mHM manufacturing procedure,
3. Ultrahigh-RI SO-mHM baking and curing procedure,
4. Ultrahigh-RI SO-mHM solvent formulation for surface appearance,
5. Photo-initiator content dependence on QHN So-TiOx thickness,
6. Lithographic exposure/development process performance demonstration and summary.

Who Should Attend:

Semiconductor chip and high-end display manufacturing and material supplier related personnel

Introduction of Speaker:

Dr. Chen worked as an equipment engineer and then supervisor in Taiwan Industrial Technology Research Institute of from 1997/10/1 to 2002/10/1 and was responsible for the maintenance of semiconductor logic integrated circuit production equipment. 2002/11/1-2003/10/1 Served as Technical Manager of Taiwan RiTDisplay Technology Co., LTD responsible for red and blue OLED components R&D. 2003/11/1-2017/10/1 Served as Supervisor and Manager of R&D Department of Taiwan Industrial Technology Research Institute, responsible for the construction of relevant 300mm process platform for applications of new-Non-Volatile Memories, also develop KrF、 e-beam and NIL lithographic process. 2017/11/1-2019/10/1 Worked in PSK Co., LTD. (Korea) Hefei Site as Process Director, responsible for the process construction and verification of FEOL and BEOL production type dry photoresist stripping machine. 2019/11/1-2020/10/1 Served as a Chair Professor in the Railway Power Supply and Electrical Department of Shandong Polytechnic College, responsible for electronic technology teaching and semiconductor related courses. 2020/10/1 Served as Deputy General Manager of Quantech (Guangzhou) New Materials Co., LTD in Guangzhou headquarters of the company, responsible for the establishment of class 10&100 clean room factory and the project development for mass

production products of high-end electronic grade spin-coating chemical material like SOG, SOD, SOC, SO-mHM, and PSPI.