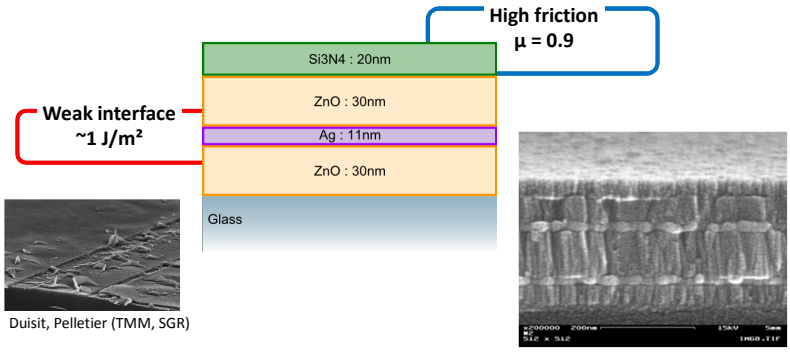
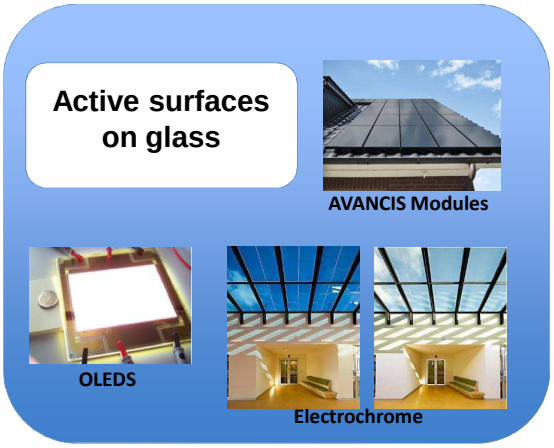
MERETHIF (Mechanical Reliability of Thin Films) MatetPro 2007

P.O. Renault[1], E. Le Bourhis[1], R. Lazzari[2], N. Brun[3], A. Benedetto4[3], S. Grachev[5], E.Sondergard[5] and E. Barthel[5]

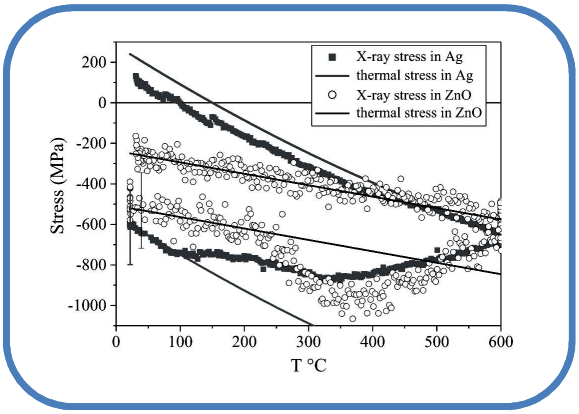
[1]Institut Pprime (Poitiers) ,[2]INSP (Paris) [3]LPS (Orsay) ,[4]Saint-Gobain Recherche (Aubervilliers),[5]Surface du Verre et Interfaces (Aubervilliers)





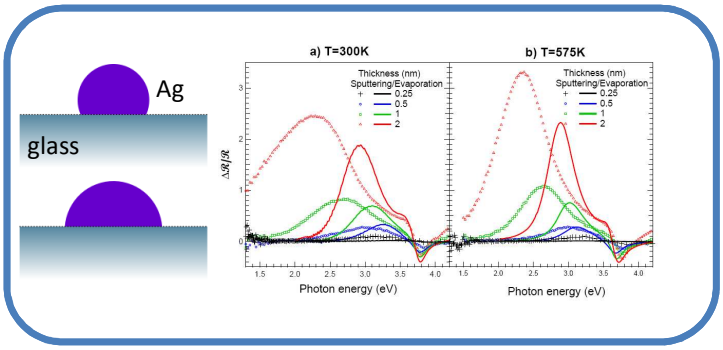
1st Axis : Residual stresses

Combined Ag and ZnO residual stress measurements during thermal cycle up to 600℃



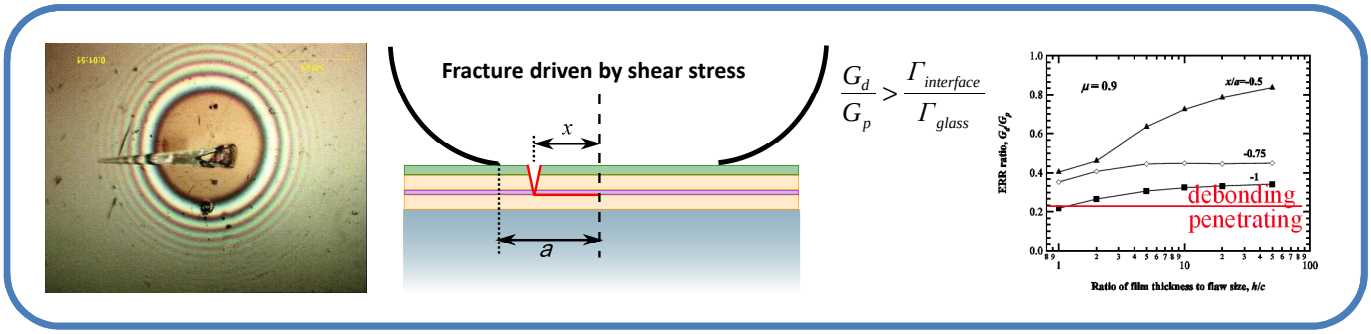
2nd Axis : Interfaces

In situ differential reflectivity for Ag growth monitoring
Comparison between evaporation and sputtering



3rd Axis :End-users workpackage

Test of mechanical stability and Modeling



Publications:

1) Residual Stresses in Sputtered ZnO Films on (100) Si Substrates by XRD, F. Conchon et al., MRS Proceedings Volume 1201 (86, S. Durbin, M. Allen and H. von Wenckstern eds.
2) X-ray diffraction analysis of thermally-induced stress relaxation in ZnO films deposited by magnetron sputtering on (100) Si substrates, F. Conchon et al., Thin Solid Films 518 (2010) 5237-5241
3) High-throughput optimization of adhesion in multilayers by superlayer gradient, S.Yu. Grachev et al., MRS Proceedings Volume 1224, J. Lou et al. eds.
4) High-throughput optimization of adhesion in multilayers by superlayer gradients, S. Y. Grachev et al. Thin Solid Films 518 (2010) 6052 – 6054
5) Mechanical behavior of stiff coating on glass under sliding contact, X. Geng, Z. Zhang, E. Barthel, D. Dalmas, Wear 269 (2010) 351-361 doi:10.1016/j.wear.2010.04.016
6) X-ray diffraction study of thermal stress relaxation in ZnO films deposited by magnetron sputtering, F. Conchon, P.O. Renault, E. Le Bourhis, C. Krauss, P. Goudeau, E. Barthel, S. Grachev, E. Sondergard, V. Rondeau, R. Gy, R. Lazzari, J. Jupille, N. Brun, Thin solid films, **519**, 1563 (2010)
7) Thermal Residual Stress Relaxation in Sputtered ZnO Films on (100) Si substrate by Synchrotron X-Ray diffraction, C. Krauss, G. Geandier, F. Conchon P.O. Renault, E. Le Bourhis, A. Benedetto, S.Y. Grachev, P. Goudeau, E. Barthel, Materials Science Forum, **681**, 127 (2011)
8) In situ thermal residual stress evolution in ZnO and Ag ultrathin films studied by Synchrotron X-Ray Diffraction, P.O. Renault, C. Krauss, E. Le Bourhis, G. Geandier, A. Benedetto, S.Y. Grachev, E. Barthel, Thin Solid Films (2011)
9) Quantitative analysis of nanoparticles growth through plasmonics, R. Lazzari, J. Jupille, Nanotechnology 22, 445703-445717 (2011)
10) Mechanical stability under sliding contact of thin silver film embedded in brittle multilayer, X. Geng, Z. Zhang, E. Barthel, D. Dalmas, Wear 276-7, 111-20 (2012)
11) Real-time monitoring of nanoparticle film growth at high deposition rate with optical spectroscopy of plasmon resonances, Sergey Grachev, Marco de Grazia, Etienne Barthel, Elin Søndergård and Rémi Lazzari, J. Phys. D: Appl. Phys. 46 225305 (2013)

CONTACT :
etienne.barthel@saint-gobain.com