As we mentioned previously that when angle of incidence increase reflectance is increased.We passed this and submitted new construction design stacks of non-polarized broadband anti-reflection coatings at high incident angles with low reflection along wide range of wavelengths as appears in Figures (7),(8).

Figure (7) shows a schematic of the optical performance and construction design stack of non-polarized broadband at θ_o=50°. With a band width extended from 426 to 800 nm. Where we got very low reflection without splitting between S-and P polarization and as its obvious that is no shifting.

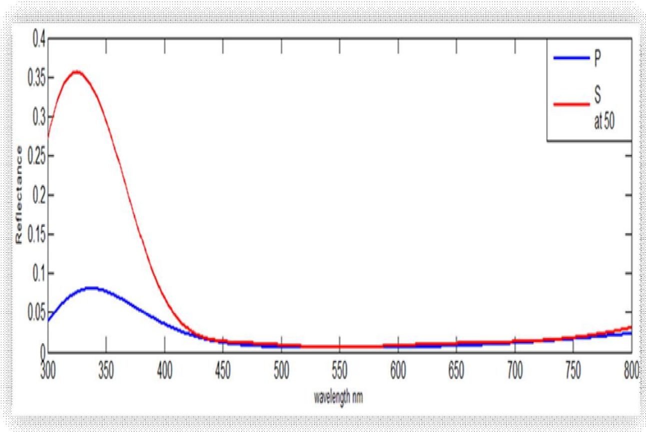

Figure (7) optical performance of o[illegible]n- polarized [illegible]adba[illegible]d antireflection coating at θ_o =50° with cons[illegible]ction design [illegible]ck : Air | 1.2022 L | 1.0702 (2[illegible] | 1.1202 M | [illegible]ass

When the incident angle increase to θo =60o we achieved good optical performance of non- polarized broadband ARC over wide band extended to 800 nm as appears in Figure (8).

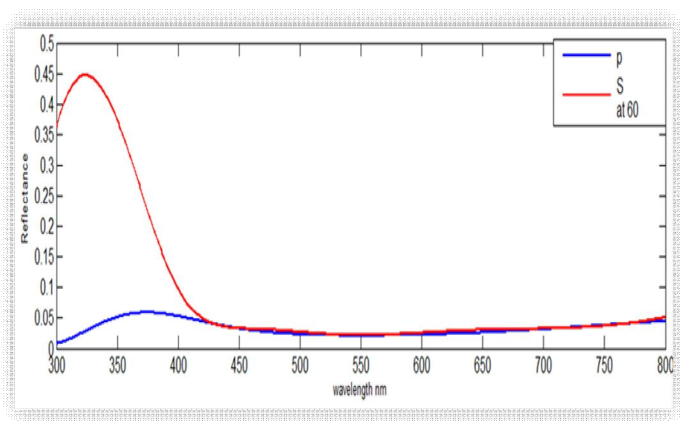

Figure (8) optical performance of ofnon- polarized broadband antireflection coating at θ_o =60° with construction design stack: Air | 1.2844L | 1.0926 (2H) | 1.1621M | Glass

4 CONCLUSION

This study has presented new construction design stacks of nonpolarizing anti-reflection coatings for visible region (300-800 nm). Successfully we got optimal optical performance of non-polarizing (v-coated) and broadband anti-reflection for different value of incident angles. Result refers that overcome the problem of splitting between S and P-polarization with increasing incident angle. Also, result presented designs of non-polarizing broadband antireflection coatings at higher incident angles.

REFERENCES

[1] Minfeng Chen, E. F. Schubert ," Design of optical path for wide-angle gradient-index antireflection coatings", Department of Electrical Engineering National Taiwan University, Taipei, Taiwan 106-17, Doc. ID 78254 (2007).

[2] Alexander V. Tikhonravov, " Estimation of the average residual reflectance of broadband antireflection coatings" , Research Computing Center, Moscow State University, Leninskie Gory, 119992 Moscow, Russia, APPLIED OPTICS _ Vol. 47, No. 13 , 2008.

[3] M.H. Asghar , M.B. Khan, and S. Naseem, (2003)," Modeling high performance multilayer antireflection coatings for visible and infrared(3.5mm) substrates", Semiconductor Physics, Quantum Electronics & Optoelectronics. vol. 6, no. 4, pp. 508-513.

[4] Alaa Nazar Abed Al-Gaffer , Hayfa Ghazi Rashid, HarakatMohsin Roomy, Needle [illegible]chnique a[illegible]ptimal Method for Optimal Design antireflection in [illegible](3.5 μm) re[illegible]n", Journal of Baghdad for Science Vol. 11, No.2, (20[illegible]) .

[5[illegible] Ozlem Duyar, H[illegible]" Design and Preparation of Antireflection and Reflecti[illegible] Optical C[illegible]tings" Turk J Phys, Vol.28, pp.139-144, (2004).

[6] H. A. Macleod, Thin-film optical filters, 4th edtion, CRC press Taylor and Francis group,(2010).

[7] Roger Easton," SIMG-455 Physical Optics", Chester F. Carlson Center for Imaging Science Rochester Institute of Technology, (2008).

[8] GauravSinha, Sunil Kumar," Multilayer Antireflection Coating for perceptible band on Silicon Substrate", IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 1 Issue 6, August (2014).

[9] H. Gh. Rashid, Design and optimization of thin-film optical filters with applications in the visible and infrared regions, Ph.D. Thesis Al Mustansiryiah University, (1996).

[10] AlaaNazar," Open Filters: For optimum design wideband ARC's at oblique incidence of light and effect dispersion of material coating", journal of education college, Al Mustansiryiah University, Vol.2, No.1, (2011).