

Fig. 1 Schematic of frequency division multiplexing technique. Three laser beams, which are intensitymodulated at discrete frequencies, are overlapped and simultaneously detected by a spectrally integrating detector. The detected signals contain information about the intensity of each beam, which can be extracted at their corresponding modulation frequencies with Fourier transform analysis.



Fig. 2 Schematic of frequency division multiplexing spectroscopic ellipsometry (FDM-SE). FDM-SE is a variant of traditional rotating polarizer ellipsometry (RPE) in which the broadband continuous-wave light source is replaced with several discrete-wavelength intensity-modulated laser diodes (LDs).

References

[1] Weinstein, S. & Ebert, P. Data transmission by frequency-division multiplexing using the discrete fourier transform. *IEEE Trans. Commun.* **19**, 628–634 (1971).

[2] Park, J., Cho, Y. J., & Chegal, W. (2024). Spectroscopic ellipsometry utilizing frequency division multiplexed lasers. *Communications Physics*, **7**(1), 1-8.