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PUBLICATION LIST

PL8010: Key publications on real-time MALS as an inline/online PAT

Summary

This document lists key publications using RT- MALS/DLS for monitoring, characterizing and controlling bioprocessing operations.

Viral vectors and extracellular vesicles

- Monitoring and Control of Adenovirus Processes with Real-Time Multiangle Light Scattering

  Apetri A, et al. *BioProcess Int.* 24(4) 2026: 240403.
  https://www.bioprocessintl.com/pat/monitoring-and-control-of-adenovirus-processes-with-real-time-multiangle-light-scattering

- AN8008: Real-time monitoring and control of AAV chromatographic enrichment with RT-MALS

  Haller FM and Some D, Waters|Wyatt application note.
  https://www.wyatt.com/library/application-notes/an8008-real-time-monitoring-and-control-of-aav-chromatographic-enrichment-with-rt-mals.html

- Novel insights into the isolation of extracellular vesicles by anion exchange chromatography

  Koch LF et al., *Front. Bioeng. Biotech.* 11:1298892.
  https://doi.org/10.3389/fbioe.2023.1298892

- Bioprocess Design and Optimization of Extracellular Vesicles Derived from Mesenchymal Stromal Cells

  Dehghani M et al., *ACS Nano* 11:1298892.
  https://doi.org/10.1021/acsnano.5c19046

mAbs and related molecules

- Multi-angle light scattering as a process analytical technology measuring real-time molecular weight for downstream process control

  Patel BA et al., *mAbs* 10(7) 2018:945-950
  https://doi.org/10.1080/19420862.2018.1505178

- Multi-attribute PAT for UF/DF of Proteins—Monitoring Concentration, Particle Sizes, and Buffer Exchange

  Rolinger L, et al. *Anal. Bioanal. Chem*. 412 2020:2123-2136
  https://doi.org/10.1007/s00216-019-02318-8

Lipid nanoparticles and liposomes

- AN8006: In-line monitoring of liposome size by RT-MALS

  Waters|Wyatt application note.
  https://www.wyatt.com/library/application-notes/an8006-in-line-monitoring-of-liposome-size-by-rt-mals.html

Polysaccharides and conjugates

- Process Analytical Technology for Real-Time Monitoring of Pharmaceutical Bioconjugation Reactions

  Ralbovsky NM et al., *Org. Process Res. Dev.* 29(2) 2025:353-362.
  https://doi.org/10.1021/acs.oprd.4c00399

- Multi angle light scattering as a process analytical technology tool for real-time monitoring of molar mass of protein-polysaccharide conjugate fractions

  Rajendar B et al., *J. Chromat. Open* 2 2022:100045.
  https://doi.org/10.1016/j.jcoa.2022.100045

- AN8005: RT-MALS end-point determination of a polysaccharide depolymerization process

  Waters|Wyatt application note.
  https://www.wyatt.com/library/application-notes/an8005-rt-mals-end-point-determination-of-a-polysaccharide-depolymerization-process.html