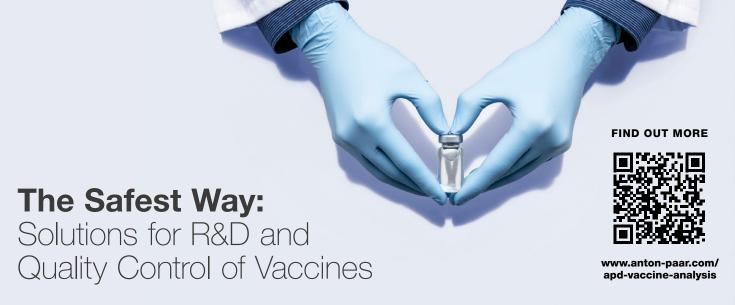


# **Vaccine Analysis**

Anton Paar develops and provides solutions for vaccine development, formulation, and quality control, including the analysis of active agents, excipients, and final product formulations.



Vaccines are one of modern medicine's great success stories, from smallpox to SARS-CoV-2. They must be carefully developed and equally thoroughly analyzed at every step of the formulation and production process.

# VACCINE SAFETY, COMPLIANCE, AND DOSAGE CONSISTENCY

- Identification, purity, and concentration checks of vaccines components
- Key parameters for R&D, production, quality control, and batch release
- ✓ Turbidity as indicator for contamination

**Instruments used:** density meter, refractometer, polarimeter, turbidity meter, multiparameter measurement combinations

## VACCINE STABILITY

- ✓ Vaccine particle size and surface charge
- Characterization of vaccine-adjuvant complexes
- Influence of variable environment conditions on product stability
- ✓ Protein aggregation and effect on liquid properties

Instruments used: particle size analyzer (DLS & ELS), rolling-ball viscometer

#### INJECTABILITY

- ✓ Viscosity formulation ensuring ease of injection
- Effects of shear forces on vaccine behavior, properties, and stability

**Instruments used:** rolling-ball viscometer, rotational viscometer, rheometer, density meter

## MRNA/LIPOSOME-BASED VACCINES

- ✓ Integrity and aggregation behavior of lipid nanoparticles
- ✓ Formation and stability analysis of liposomes
- ✓ Studying the internal structure of liposome systems

Instruments used: rolling-ball viscometer, particle size analyzer (DLS & ELS), SAXS analyzer

#### DATA INTEGRITY FOLLOWING ALCOA+ PRINCIPLES

- ✓ Software for data integrity and management
- Remote data access, review, and compliant electronic signature
- ✓ Complete audit trail of measurements and metadata

Instruments used: AP Connect lab execution software – Pharma edition

Your distributor: