

# Thermo Scientific HAAKE MARSxR RheoRaman System

Deepen materials understanding through multi-modal analysis

**Applications:**

- Advanced Polymeric Materials
- Pharmaceutical Hotmelts
- Food and Cosmetic Emulsions
- Coatings
- Adhesives

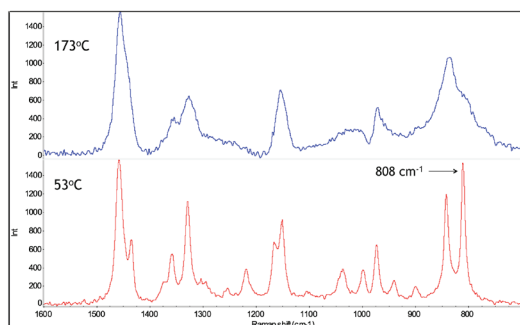
**Key benefits:**

- Obtain real time insight into molecular changes that drive a shift in rheological behavior
- Obtain deeper insight into phase transitions, crystallization and product stability
- Correlate rheological properties and molecular changes on the same sample under identical conditions
- Increase information content while saving time

## Product description

- The integration of a Thermo Scientific™ HAAKE™ MARS™ rheometer and the Thermo Scientific™ iXR™ Raman spectrometer
- Collect simultaneous rheological and Raman data
- Rheometry tells us what, while Raman spectroscopy tells us why
  - The rheometer discloses how a sample behaves under a given stress or strain
  - Raman spectroscopy provides positive chemical identification and a spectral fingerprint unique to a material, and also reveals morphology and structural changes during phase transitions
- Unambiguous correlation of results because they are collected on the same sample, at the same time, under the same conditions
- Saves time compared to sequential measurements on two different instruments

## Tracking high density polyethylene crystallization using the HAAKE MARSxR RheoRaman system



Raman spectrum of the molten (top) and crystalline (bottom) states of polypropylene, measured on the MARSxR Rheo-Raman system during a rheological measurement. The band at 808 cm⁻¹ is due to the skeletal deformation of helical chains within the crystal, and its intensity can be used as a measure of crystallinity of polypropylene.

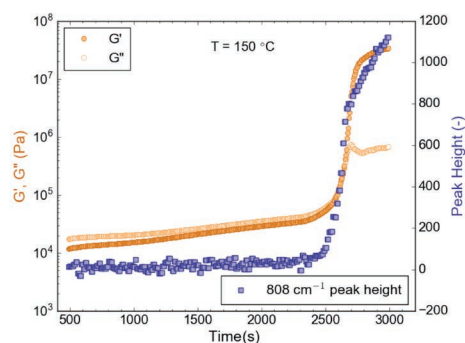


### Order Information

912A0908	iXR Spectrometer Mainframe
840-294300	HAAKE MARSxR RheoRaman Interface Kit

Select at least one of:

840-285900	785 nm High Brightness	Laser Kit
840-286000	785 nm High Power	Laser Kit
840-285600	532 nm High Brightness	Laser Kit
840-285500	455 nm High Brightness	Laser Kit



Shear storage modulus (G'), shear loss modulus (G'') and the 808 cm⁻¹ Raman shift peak height as a function of time during the isothermal recrystallization of polypropylene measured on the MARSxR Rheo-Raman system. G' and G'' were obtained from the MARS rheometer, and the 808 cm⁻¹ peak height was determined from the iXR Raman spectra.



### Order Information

379-0600	HAAKE MARS Rheometer
222-2313	RheoRaman Module
222-1817	20x Long Working Distance Objective
222-1812	Lower glass measuring plate
222-2089	Plate 35mm with ceramic shaft (or alternate rotor if required)
222-1897	Temperature module power supply (2 required for high temperature version)

For high temperatures:

222-2172	Electrical temperature module TM-EL-H
222-1902	Holder for TM-EL-H

Find out more at [thermofisher.com/ixr](http://thermofisher.com/ixr)

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