Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary Information

Exploring role of Muscovite in poly(alkyl methacrylate)-based ternary nanocomposite cryogels with selective functional groups: Formation via cryogelling with the aid of inorganic clay

Nur Sena OKTEN BESLİ[a] and Nermin ORAKDOGEN[a]*

XRD pattern of PADH/MUSm-Ngels

XRD pattern of pristine MUS, clay-free terpolymer cryogel (PADH/MUS0-Cgel) and clay-free terpolymer hydrogel (PADH/MUS0-Hgel) as well as nanocomposite PADH/MUS10-NCgel and NHgel samples prepared at C_{MUS} = 1.50% (w/v) were presented in Figure S1.

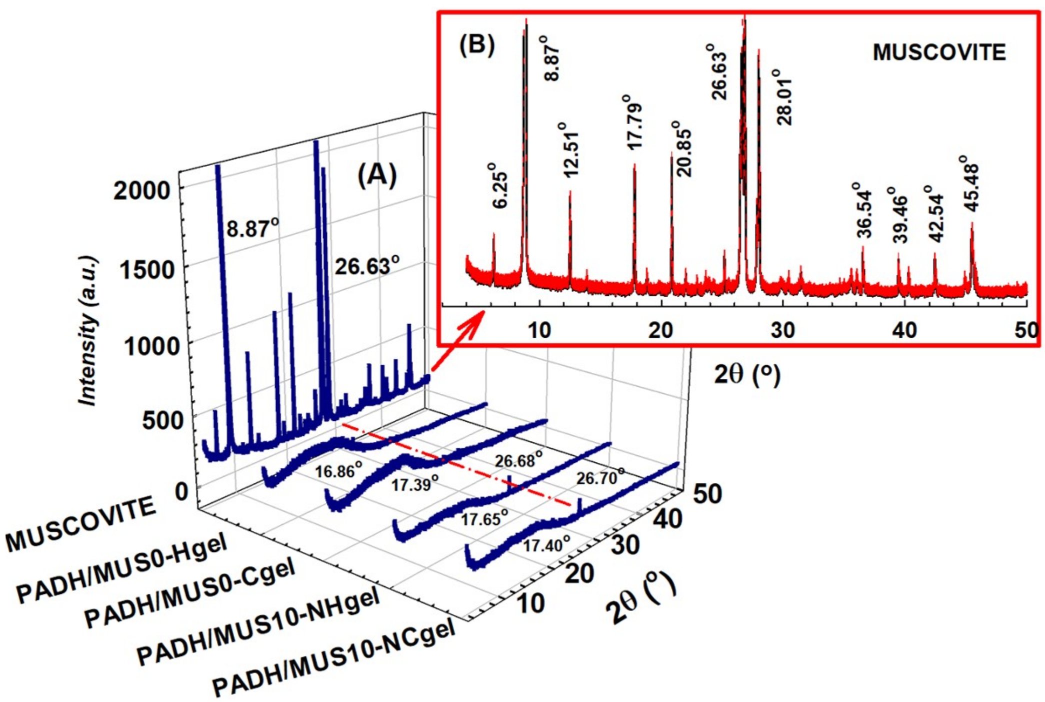

Figure S1. XRD pattern of pristine MUS, clay-free terpolymer cryogel (PADH/MUS0-Cgel) and clay-free terpolymer hydrogel (PADH/MUS0-Hgel) as well as nanocomposite PADH/MUS10-NCgel and NHgel samples prepared at C_{MUS} = 1.50% (w/v), respectively.

Thermal gravimetric analysis of PADH/MUSm-Ngels

Figure S2 shows MT / M_0% and DTG curve of pristine MUS, clay-free cryogel and hydrogel (PADH/MUS0-Cgel and -Hgel), terpolymer nanocomposite cryogel and hydrogel (PADH/MUS8 and PADH/MUS10-NCgel and -NHgel) samples prepared at MUS content 1.10% (w/v) and 1.50% (w/v), respectively.

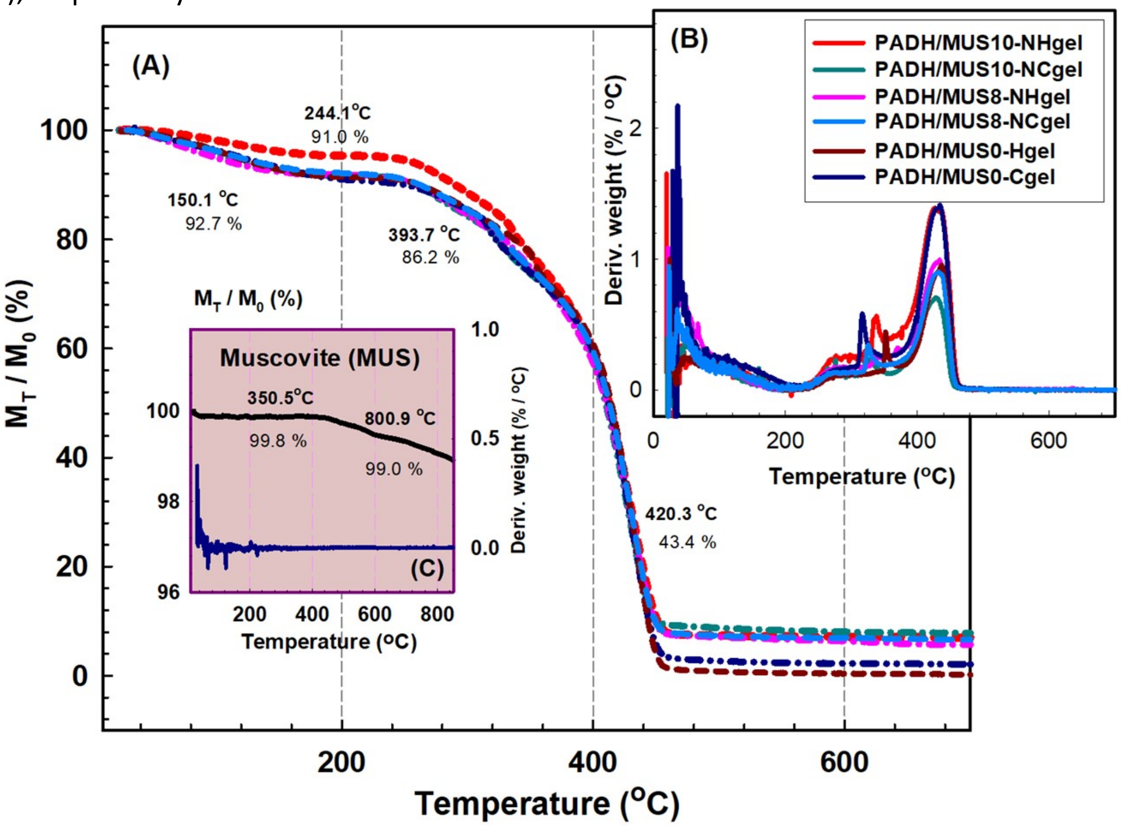

Figure S2. M_T / M_0% (A) and DTG curve (B) of MUS-free cryogel and hydrogel (PADH/MUS0-Cgel and -Hgel), terpolymer nanocomposite cryogel and hydrogel (PADH/MUS8 and PADH/MUS10-NCgel and -NHgel) samples prepared at MUS content 1.10% (w/v) and 1.50% (w/v), respectively. (C) M_T / M_0% and DTG curve of pristine MUS.

Dual-responsive self-assembly behavior of PADH/MUS-Ngels

pH-responsive swelling behavior of PADH/MUSm-NHgels

Figure S3 shows the equilibrium volume swelling ratio φ_V of terpolymer PADH/MUSm-NHgels shown as a function of the swelling pH as well as MUS loading levels. Photographs of PADH/MUS8-NHgels containing 1.10% (w/v) MUS after swelling in pH buffer solution of 2.1 and 9.8 are already given.

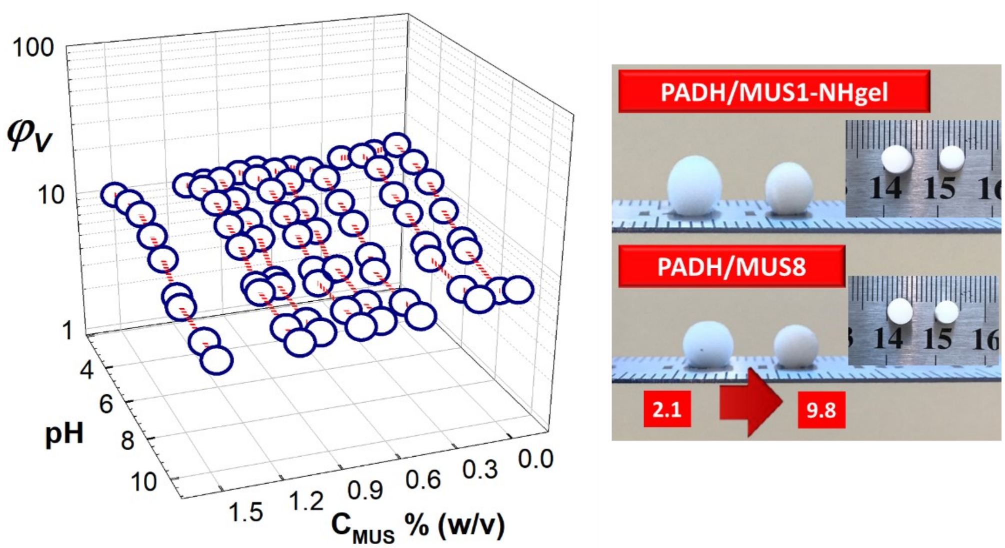

Figure S3. (A) Photographs of PADH/MUS8-NHgels containing 1.10% (w/v) MUS after swelling in pH buffer solution of 2.1 and 9.8 and pH-response of DEAEM units in acidic and alkaline conditions. Equilibrium volume swelling ratio φ_V of terpolymer PADH/MUSm-NHgels shown as a function of the swelling pH as well as MUS loading levels.

Temperature-responsive swelling behavior of PADH/MUSm-NHgels

Temperature-dependent equilibrium volume swelling ratio φ_V of terpolymer PADH/MUSm-NHgels are shown as a function of the swelling temperature as well as MUS loading levels in Figure S2.

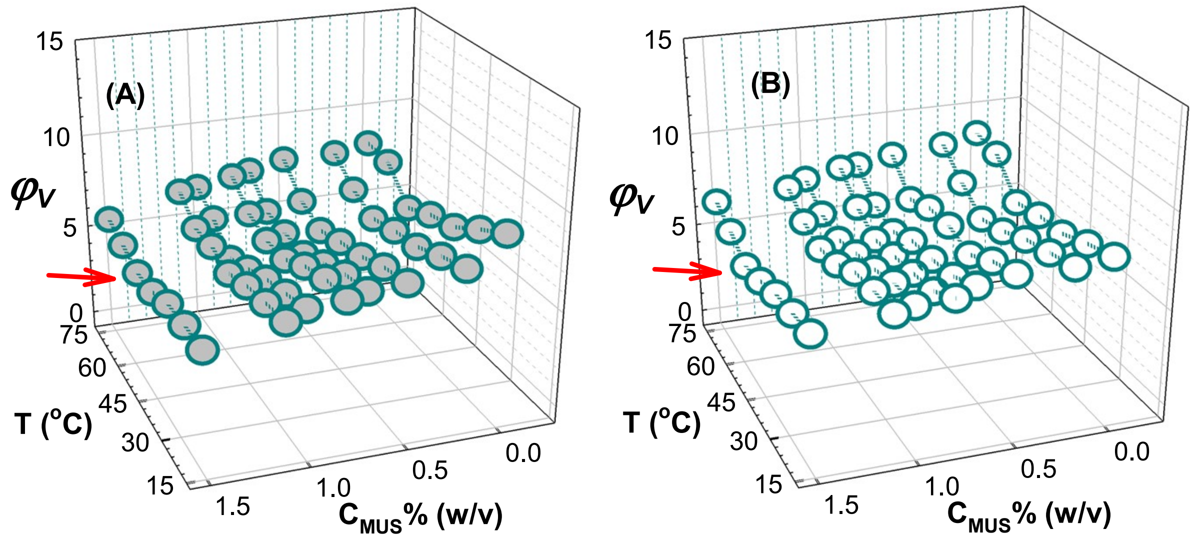

Figure S4. Temperature-dependent equilibrium volume swelling ratio φ_V of terpolymer PADH/MUSm-NCgels (A) and PADH/MUSm-NHgels (B) shown as a function of the swelling temperature as well as MUS loading levels.

Salting-in/out characteristics of PADH/MUS-NHgels

The equilibrium volume swelling ratio φ_V of PADH/MUSm-NHgels as a function of the MUS loadings as well as the ionic strength of aqueous salt solutions of KI (A), KBr (B), and KCl (C) are collected in Figure S3.

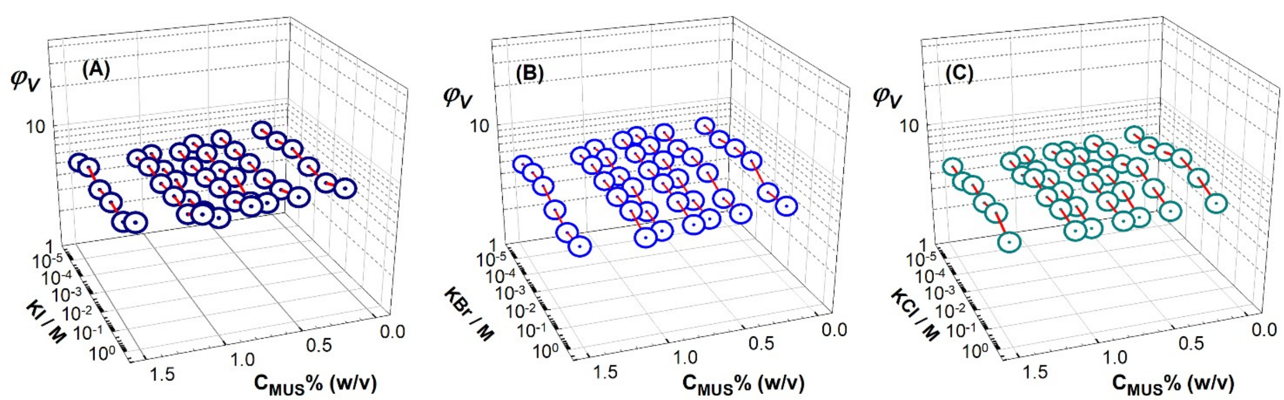

Figure S5. The equilibrium volume swelling ratio φ_V of PADH/MUSm-NHgels as a function of the MUS loadings as well as the ionic strength of aqueous salt solutions of KI (A), KBr (B), and KCl (C).