**Supplementary material**

**Synthesis of a thermo- and pH-sensitive comb-type graft copolymer by ionizing radiation.**

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**FIG. S1** FTIR-ATR spectrum of (SR-*g*-4VP16%)-*g*-NVCL10%.

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**FIG. S2** Elongation profile of grafted films with different graft content. **b)** SR irradiated at 30 kGy in DMF, **c)** SR-*g*-4VP7%, **d)** SR-*g*-4VP42% and **e)** (SR-*g*-4VP42%)-*g*-NVCL13%.

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**FIG. S3** Thermogravimetric analysis of pristine SR, homopolymers and binary graft copolymer in nitrogen atmosphere from 25 °C to 800 °C.

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