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# Stimuli-responsive smart gating membranes

## Supplementary Material

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The information on the researchers who pioneered to develop various stimuli-responsive smart materials as well as gating membranes is summarized in Tables S1 and S2.

**Table S1.** The information on the researchers who pioneered to develop *positively* stimuli-responsive smart materials and membranes

Type of the responsive gating	Name of the typical gating polymer	Researchers who pioneered to discover the responsive property	Researchers who pioneered to develop gating membrane
Thermo-responsive gating	Poly( <i>N</i> -isopropylacrylamide)	Scarpa <i>et al</i> <sup>[S1]</sup>	Okahada <i>et al</i> <sup>[S2]</sup>
pH-responsive gating	Polyelectrolytes containing cationic groups	/	Mika <i>et al</i> <sup>[S3]</sup> (Probably)
Ion-responsive gating	Poly( <i>N</i> -isopropylacrylamide-co-benzo-15-crown-5-acrylamide)	Mi <i>et al</i> <sup>[S4]</sup>	Liu <i>et al</i> <sup>[S5]</sup>
Molecule-responsive gating	Poly( <i>N</i> -isopropylacrylamide-co-beta-cyclodextrin)	Nozaki <i>et al</i> <sup>[S6]</sup>	Yanagioka <i>et al</i> <sup>[S7]</sup>
UV-light-responsive gating	Azobenzene-based materials	Krollpfeiffer <i>et al</i> <sup>[S8]</sup> (Probably)	Anzai <i>et al</i> <sup>[S9]</sup>
Glucose-responsive gating	Poly(acrylic acid) with glucose oxidase	Fischel-Ghodsian <i>et al</i> <sup>[S10]</sup>	Ito <i>et al</i> <sup>[S11]</sup>
Magnetic-responsive gating	Poly( <i>N</i> -isopropylacrylamide) with magnetic nanoparticles (Fe <sub>3</sub> O <sub>4</sub> )	Takahashi <i>et al</i> <sup>[S12]</sup>	Hoare <i>et al</i> <sup>[S13]</sup>

**Table S2.** The information on the researchers who pioneered to develop *negatively* stimuli-responsive smart materials and membranes

Type of the responsive gating	Name of the typical gating polymer	Researchers who pioneered to discover the responsive property	Researchers who pioneered to develop gating membrane
Thermo-responsive gating	Interpenetrating polymer networks composed of polyacrylamide and poly(acrylic acid)	Ilmain <i>et al</i> <sup>[S14]</sup>	Chu <i>et al</i> <sup>[S15]</sup>
pH-responsive gating	Polyelectrolytes containing anionic groups	/	Okahata <i>et al</i> <sup>[S16]</sup>
Ion-responsive gating	Poly( <i>N</i> -isopropylacrylamide- <i>co</i> -benzo-18-crown-6-acrylamide)	Irie <i>et al</i> <sup>[S17]</sup>	Yamaguchi <i>et al</i> <sup>[S18]</sup>
Molecule-responsive gating	Poly( <i>N</i> -isopropylacrylamide- <i>co</i> - $\beta$ -cyclodextrin)	Nozaki <i>et al</i> <sup>[S6]</sup>	Yanagioka <i>et al</i> <sup>[S7]</sup>
UV-light-responsive gating	Spiropyran-containing polymers	Irie <i>et al</i> <sup>[S19]</sup>	Chung <i>et al</i> <sup>[S20]</sup>
Ion-strength-responsive gating	Zwitterionic polymers	/	Okahata <i>et al</i> <sup>[S21]</sup>
Redox-responsive gating	Poly[3-carbamoyl-1-( <i>p</i> -vinylbenzyl)pyridinium chloride]	Ishihara <i>et al</i> <sup>[S22]</sup>	Ito <i>et al</i> <sup>[S23]</sup>

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