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(54) Title: REVERSIBLE SHAPE MEMORY POLYMERS EXHIBITING AMBIENT ACTUATION TRIGGERING

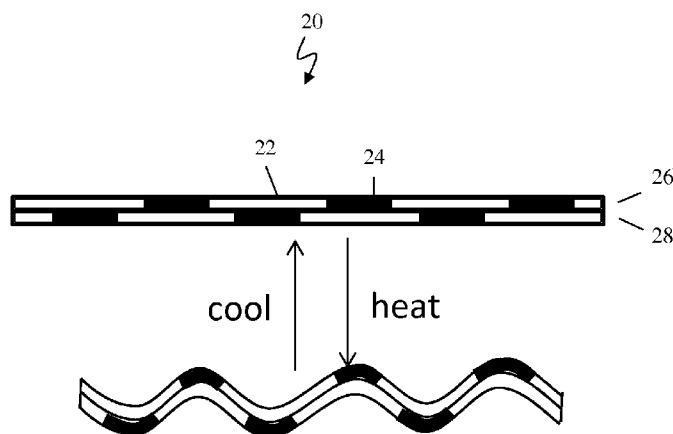


FIG. 5

(57) Abstract: Shape memory polymers featuring reversible actuation capability under ambient stimulus for integration with apparel. One approach is to use a multiblock polymer consisting of two (or potentially more) blocks in which the one block is the crystalline switching block with relatively low melting transitions, the other block has a higher thermal transition, and the two blocks are linked together by a linker molecule. Another approach is to use a graft copolymer having high and low melting transitions where the graft copolymer has a first polymer serving as the backbone and a second polymer being grafted to or from the backbone at certain graft locations. A further approach is to use latent crosslinking of a semicrystalline polymer with reactive groups placed on the backbone. Finally, these polymers may be formed as actuators that undergo curling, twisting and even volumetric expansion.



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INTERNATIONAL SEARCH REPORT

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C08F 299/00; B32B 27/38; C08F 32/08; C08G 63/06; B32B 27/40; B29C 41/02; B05D 3/12; B29C 51/10; C08G 18/48; C08F 297/00; C08G 81/00; C08G 83/00; C08J 5/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: shape memory, actuator, elastomer, heat

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2009-0280330 A1 (XIE, T. et al.) 12 November 2009 See claims 1, 2, 5, 12.	1-20
A	JP 01-204719 A (ZEON KASEI CO., LTD.) 1989.08.17 See page 105-107.	1-20
A	US 2010-0181698 A1 (BERGER, E. J. et al.) 22 July 2010 See claims 1-10.	1-20
A	US 6720402 B2 (LANGER, R. S. et al.) 13 April 2004 See claims 1-33; figure 3.	1-20
A	US 2010-0240841 A1 (SHIMURA, M. et al.) 23 September 2010 See claims 1, 7-9.	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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