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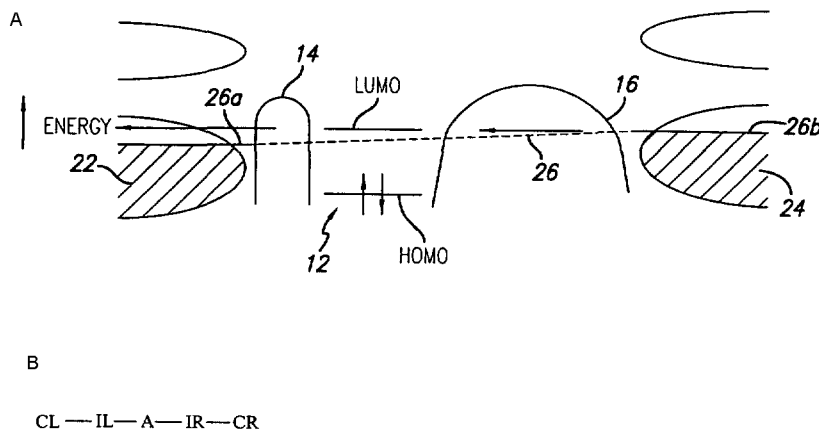
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(54) Title: A LOW-FORWARD-VOLTAGE MOLECULAR RECTIFIER



(57) Abstract: A single molecular species having a low-forward-voltage rectifying property is provided. The molecular species is represented by the formula (a), where A is a "conducting" moiety (with a relatively narrow HOMO-LUMO gap), IL and IR are each an "insulating" moiety (with a relatively wide HOMO-LUMO gap), CL is a connecting group for an attachment to a first electrode, and CR is a connecting group for attachment to a second electrode. Also, a low-forward-voltage rectifying molecular rectifier is provided, comprising the molecular species

attached between the two electrodes. The present teachings provide a set of design rules to build single-molecule rectifying diodes that operate at low forward and large reverse voltages. Such single-molecule rectifying diodes are useful in a variety of nano-scale applications.



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