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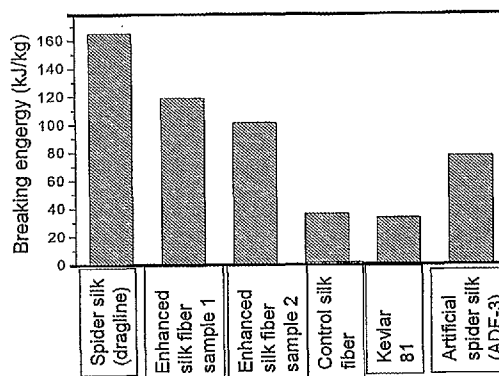
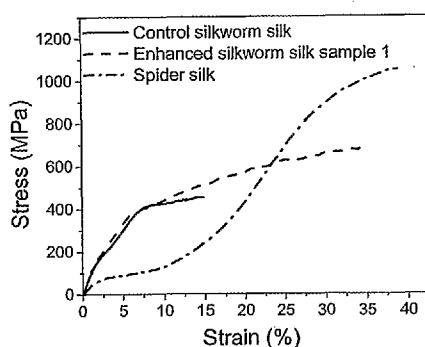
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(54) Title: ENHANCED SILK PROTEIN MATERIAL HAVING IMPROVED MECHANICAL PERFORMANCE AND METHOD OF FORMING THE SAME.



(57) Abstract: The invention provides an enhanced silk fiber rivaling spider silk in mechanical performance, in combination with a very low-cost method for producing it from the usual silkworms. The method provides for the simple application of an electric field which results in an enhancement of over (?) 40% in the strength, and of 200% in the breaking energy with respect to ordinary silkworm silk. The critical elasticity is enhanced to the level of the dragline spider silk. The provided enhanced silk protein material has the same protein primary structure, fiber diameter and length of the customary silk. The method of formation offers the following advantages in comparison to other methods available in the prior art. Industrial scale production can be readily and cost-effectively achieved, given the wide-range availability of silkworms. The provided method relies largely on the present standard production processes of silkworm silk, and hence a low level of investment is required. Since no additional chemicals are required, the provided method is environmentally friendly.