REVIEWS ON THE MANUSCRIPT [6]

Reviewer 1:

The general structure of the paper is good and the theoretical part is OK.

Figure 2 is a little strange because ε is a function of the force, at least I think this should be pointed out.

In figure 4, presumably the angle is kept constant at some value. What angle?

The same goes for Figure 5.

Finally, the formula layout is not very elegant, I suggest using the equation editor in Word or making the equations separately (with better resolution) and paste them as pictures.

With these changes I would recommend the paper.

Reviewer 2:

<u>Comments:</u>

The article does not present a full solution. However it is a sound description and scientific analysis of the chosen approach (see below).

In abstract, if you mention verification of theoretical predictions. Specify briefly those predictions and the verification.

<u>The strongest and the weakest aspect of the paper:</u>

The strongest aspect of the paper is the use of different types of tape, and additional, thermodynamic analysis of the problem.

The weakest aspect of the paper is simplicity of the proposed theoretical approach, and formatting of equations, which make them hard to read. Other parameters than angle and temperature are neglected.

<u>Organization and Presentation:</u>

The article is fairly understandable.

<u>Style:</u>

Equations are unclear; should be re-written or putted in better quality (resolution). The should be placed in a separate line, not inside the text.

The language style is easy and understandable.

There are a number of spelling errors (spell check strongly suggested).

<u>Additional Questions:</u>

- What are the limitations of using Hooke's law?
- What is a slip-stick problem?

<u>References:</u>

The number of used references is poor. Could be expanded.

Recommendation:

- Change the “Introduction” to “abstract”
- Put the equations and images in better quality
- Some graph descriptions jumped to another page (see to it, page 3)
- The equation in the Temperature section for free energy is not formatted (there is an empty box in it)
- answer additional questions

Summary:

The manuscript is recommended for publication after revision.

Reviewer 3:

This contribution is quite well written with a reasonable discussion of the experiment.

One problem I have is with the theoretical formula for the force (but the basic angle dependence is OK). The second problem is the temperature-dependence section, which is quite sketchy. Let me give a few brief comments.

In the Adhesion, cohesion and rupture section, I miss a description of the adhesive/cohesive rupture phenomena. Furthermore, in the Model, the author does not say which one of the two modes he actually investigates (although he looks at energy needed for tape elongation). The Model section actually starts with a discussion of thread formation, which is then never built on. Is the thread-forming the main phenomenon, or is it the "adhesive energy per surface", which the author get as a fit parameter in their Figure 2.3?

The formula for F quickly introduced in the Model section needs more explanation. The work done by the peel-off force goes for tape elongation, plus the work required for peeling. Even though the tape does not shear, it does elongate (that's why there's the backing characteristic). That is why I believe the formula is wrong.

It should be

total work done by pulling = surface energy (peeled off) + energy stored in the tape elongation

F (x(1+epsilon)-x cos theta) = G b x + E bh epsilon^2 / 2x

The total work comes from e.g. imagining a weight attached to the end of the tape, moving down the amount

(1+epsilon)-x cos theta

Now epsilon also needs to be experimentally measured, while E and G are fitted parameters ...

It indeed gives a F = ... / (... - cos theta) dependence, so the author are not fitting something bad.

In the Experimental setup section, the discussion of "other tapes" is not complete, as it is quite possible that other tapes would not just show a "tape property". They could have a qualitatively different behavior of F(angle), or different velocity-dependences.

The Angle section contains the main results: fits of the const./(const. - cos theta) dependence of the peel-off force.

This formula was (quickly) introduced in the Model section, Both of the constants are obtained as fits - and as I commented for the Model section, this is not in the end completely wrong. The x-axis description in the figures though has a +cos in them, I don't know why.

Finally, the temperature section kind of returns to the "threads forming" idea in the beginning. However, it does it trying to involve a statistical physics approach with the temperature governing how many threads will form. Nevertheless, I find this quite a stretch, as there is never a discussion of whether we have observed anything like this, or whether there is one "big" thread. There are simply too many extra parameters (empirical n, critical temperature, etc.) that we could almost "fit anything" through the data. The fits for Force (temperature) thus don't hold much meaning for me. The formulae (say the one for U) even has some unreadable symbols in it, so I could not check anything there.

Further small typos:

the Hook's law ... Hooke's law
in constant ... at a constant
peel of ... peel-off
Pot was ... The pot was
as such can ... as these can

Editorial request

References: Please type the reference [1] in a way that the readers may immediately understand where and how they may look for a document. Add volumes and journal titles.