**Using Friction Force Microscopy to study Molecular Recognition**

**Andrzej J. Kulik, Maciej Dendzik, Malgorzata Lekka, Wieslaw Nowak**

*EPFL, KTH, PAN, UMK*

Classical pull-up AFM experiments are used to study interaction between proteins. The main drawback of the method is only 1% of successful events, since low coverage of the sample surface has to be used to prevent multiple interactions. The tedious elimination of hundreds of F-d curves without unbinding events asks for specialized software or lot of time.

Lateral (Friction Force) unbinding is not only permitting for faster pulling speeds but also allows for quick localization of binding sites directly on a friction image. However, the exact calibration of lateral force constant can be tricky and often requires specialized equipment.

Here, we present an easy and fast method for lateral force calibration (SMOK - Single Molecule Optimized (K)Calibration). The method is based on scanning a dextran-covered surface at an angle (22.5 degrees) with respect to the surface. The characteristic kink on force-distance curve (1 nN) corresponding to the single molecule unfolding, is seen on both: normal and lateral signals.

[Probing fibronectin–antibody interactions using AFM force spectroscopy and lateral force microscopy](https://scholar.google.com/scholar?oi=bibs&cluster=7309600882782547755&btnI=1&hl=en)

AJ Kulik, M Lekka, K Lee, G Pyka-Fościak, W Nowak - Beilstein journal of nanotechnology, 2015

[A single-molecule stretching method for lateral and normal AFM lever calibration](https://scholar.google.com/scholar?oi=bibs&cluster=12218091551490279121&btnI=1&hl=en)

M Dendzik, A Kulik, F Benedetti, PE Marszalek, G. Dietler - Nanotechnology, 2013

