

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**‘Finger-like’ instabilities of the moving rim during the dewetting of thin polymers films**<sup>1</sup> SYLVAIN GABRIELE<sup>2</sup>, PASCAL DAMMAN<sup>3</sup>, ALAIN JONAS COLLABORATION<sup>4</sup> — Due to its wide applications field, understanding and controlling the mechanisms that lead to thin films instability is of outstanding interest. In this communication, we focus on a physical process arising at the moving rim during the dewetting of viscoelastic fluids. In the purely viscous regime, the three-phase contact line undulates and finally leads to droplets formation. This transversal instability of the rim is clearly reminiscent of the Rayleigh-Plateau instability. This study gives a special attention to the role of the width of the rim and of the dewetting velocity to understand the early stages of the instability and its characteristic wavelength. In fact, the droplets formation induces a self-regulation of the width of the rim which provides a faster way for the fluid to dewet the substrate.

<sup>1</sup>Supported by FNRS and Materia Nova asbl

<sup>2</sup>Materia Nova asbl - Mons (Belgium)

<sup>3</sup>FNRS - UMH - Mons (Belgium)

<sup>4</sup>UCL - Poly - Louvain-la-Neuve (Belgium)

Sylvain Gabriele

Date submitted: 04 Dec 2004

Electronic form version 1.4