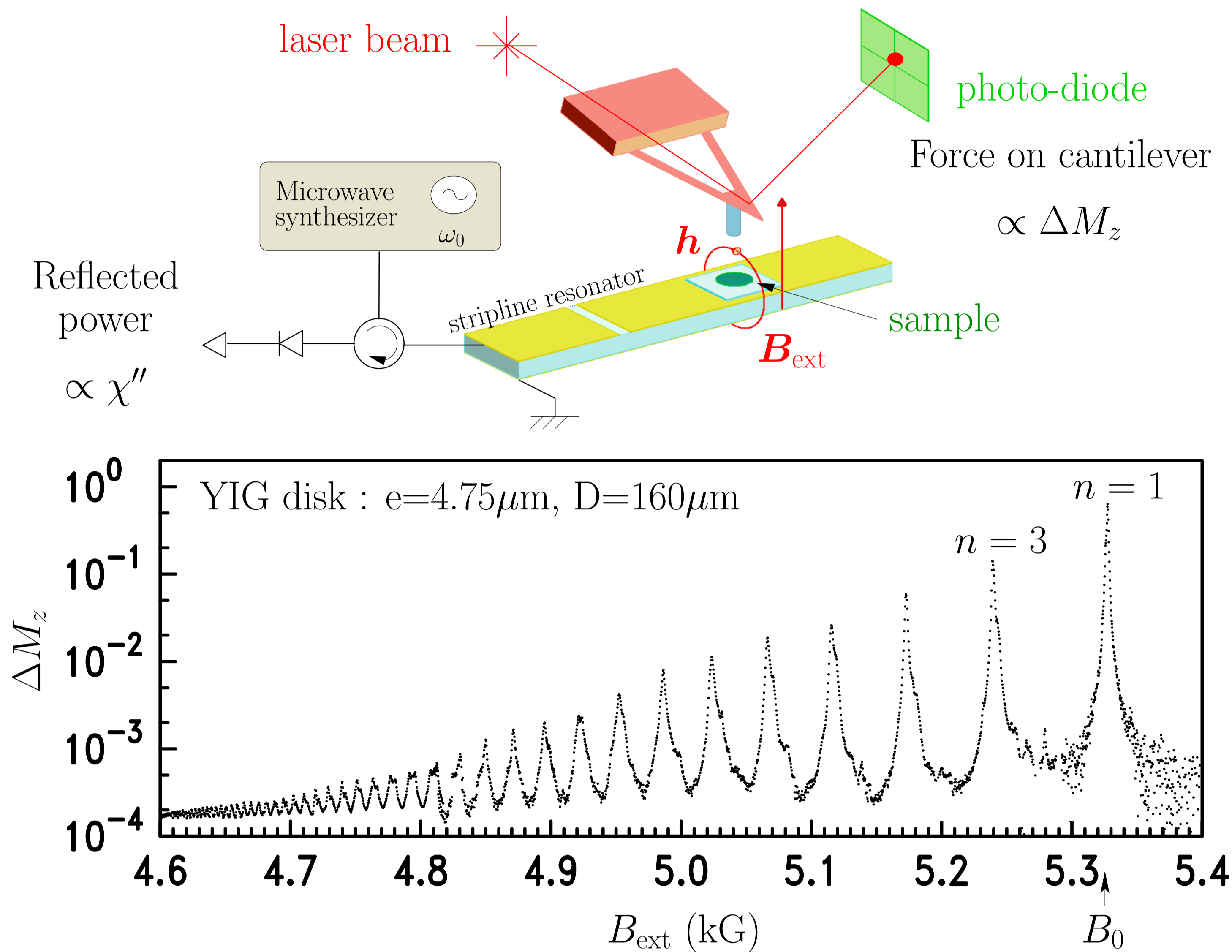
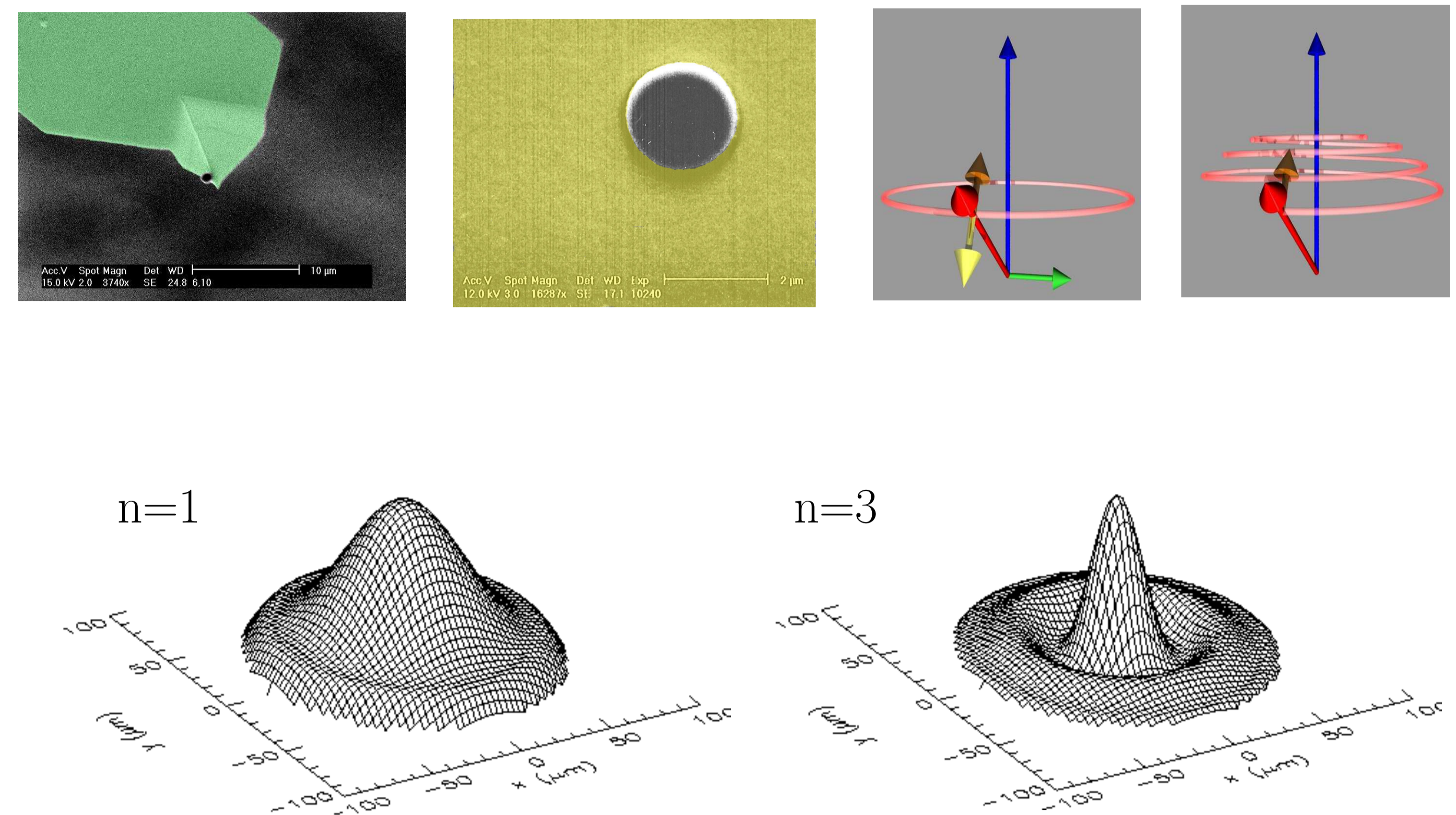


Principles of mechanical-FMR



CoFeNi sphere $\phi = 1\mu m$

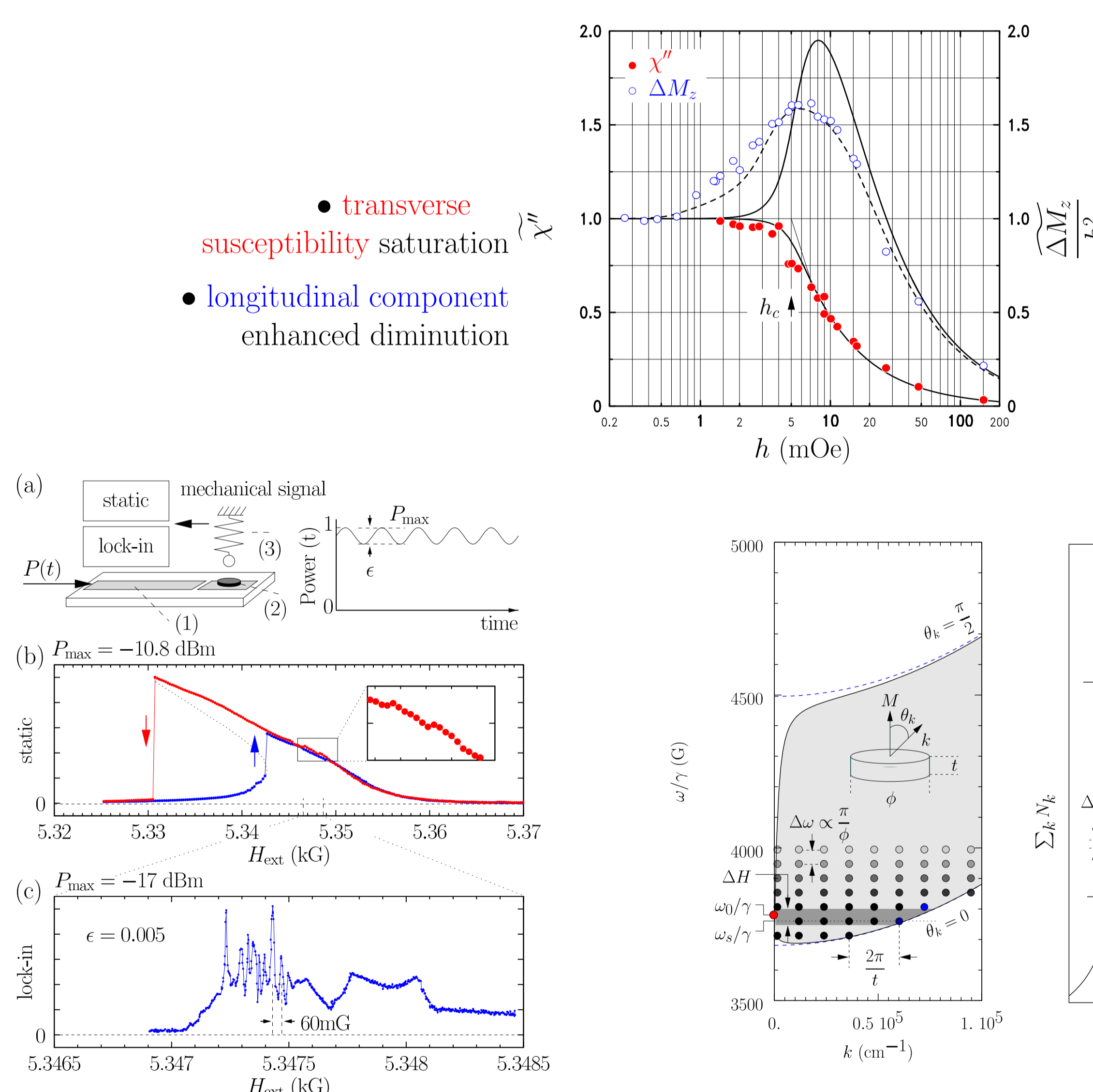


Mechanical detection advantages :

- sensitivity \rightarrow individual submicron structures
- measurement of M_z : direct access to T_1
- mode imaging \rightarrow spatially resolved dynamics

Non-linear effects

Experimental evidence that energy relaxation time is power dependent



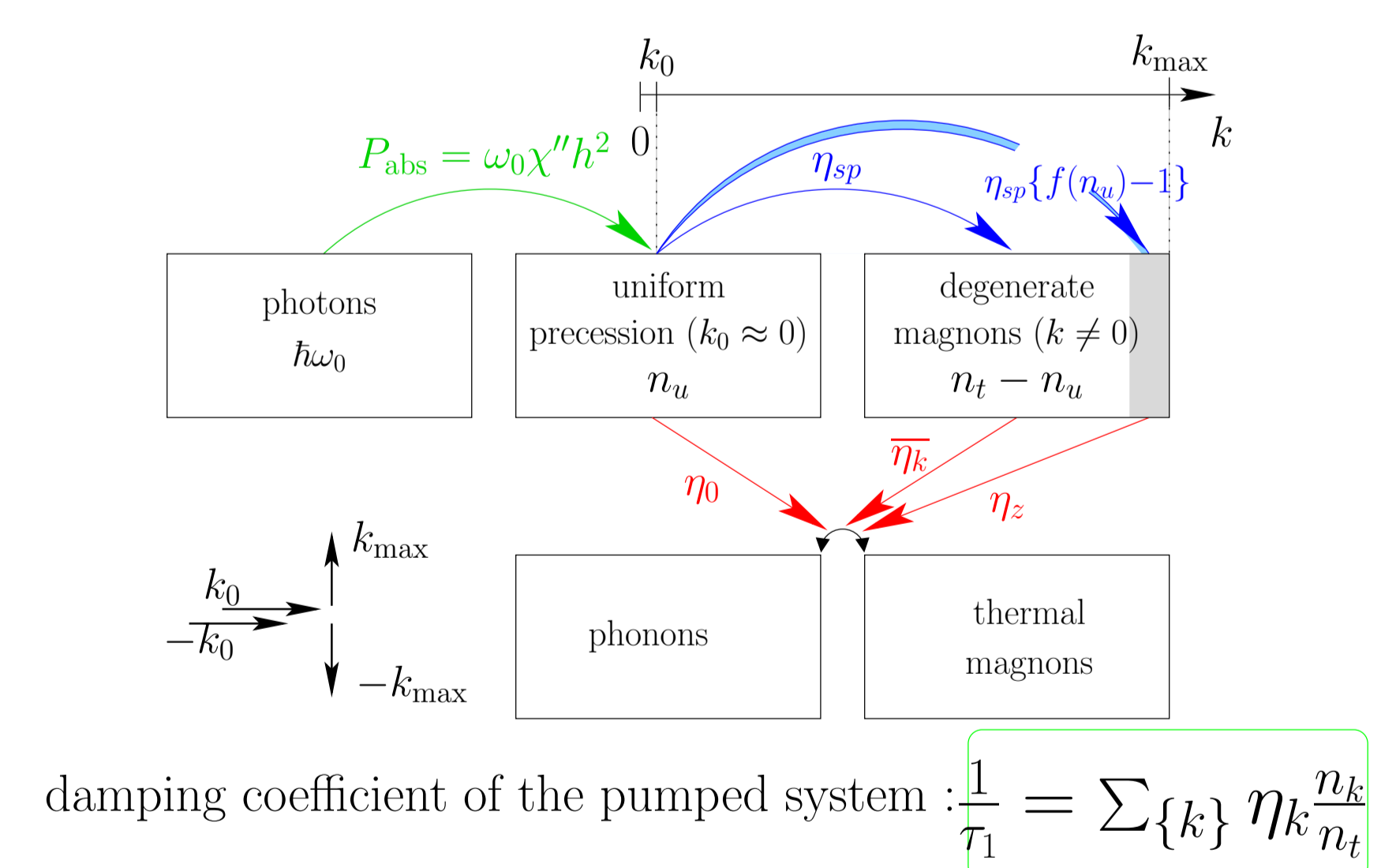
- transverse susceptibility saturation
- longitudinal component enhanced diminution

Simultaneous measurement of transverse and longitudinal components

$$\frac{\Delta M_z}{M_s \gamma h} = n_t \quad \frac{\chi'' h^2}{2 M_s \gamma h} = n_u$$

energy stored in the sample $\frac{\hbar \omega_0 \Delta M_z}{\gamma h} = \tau_1 \omega_0 \chi'' h^2$
power absorbed during spin-lattice relaxation time

Parametric magnons excited by 4-wave process:



Bilan

Trois thèses: Vincent Charbois, Grégoire de Loubens, Andrei Leksikov
Un brevet : YTCO asservi sur les excitations paramétriques
Neuf publications dans des revues à comité de lecture

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ACI Nanoscience NN085

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