

Supporting Information for:

Revisiting Pressure-induced Transitions in Mesoporous Anatase TiO₂

Denis Machon^{1,2,*}, Laurence Bois³, Défi Jr Jubgang Fandio^{2,4}, Quentin Martinet¹, Alexis Forestier¹, Sylvie LeFloch¹, Jérémie Margueritat¹, Vittoria Pischedda¹, Denis Morris^{2,4},
Lucien Saviot⁵

1. Univ Lyon, Université Claude Bernard Lyon 1, CNRS, Institut Lumière Matière, F-69622, Villeurbanne, France
2. Laboratoire Nanotechnologies et Nanosystèmes (LN2), CNRS UMI-3463, Université de Sherbrooke, Institut Interdisciplinaire d'Innovation Technologique (3IT), Sherbrooke QC J1K 0A5, Québec, Canada
3. Laboratoire Multimatériaux et Interfaces, UMR CNRS 5615, Université Claude Bernard Lyon 1, Lyon 69007, France
4. Département de Physique et Regroupement Québécois sur les Matériaux de Pointe, Université de Sherbrooke, Québec, J1K2R1, Canada
5. Laboratoire Interdisciplinaire Carnot de Bourgogne, UMR 6303 CNRS Université de Bourgogne Franche-Comté, 9 Av. A. Savary, BP 47870, F-21078 Dijon Cedex ,France

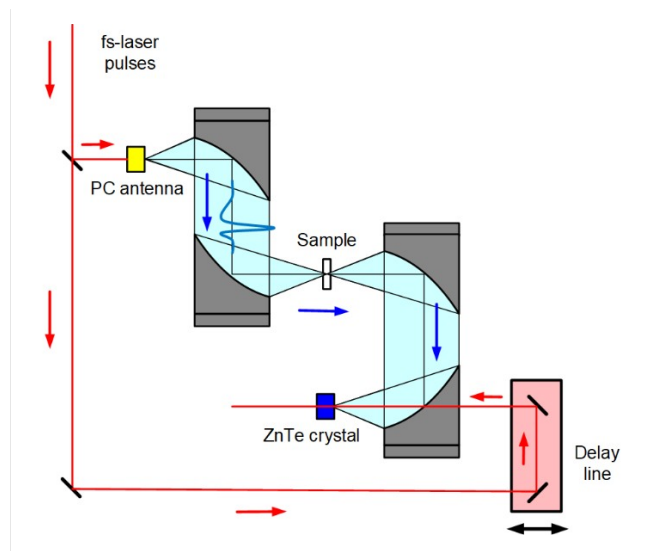


Figure S1 - Schematic view of the TeraHertz-Time Domain Spectroscopy set-up

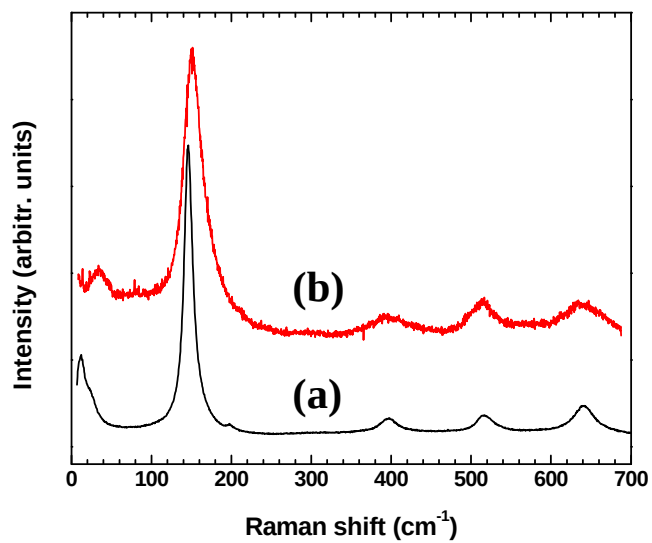


Figure S2 – Comparison of Raman spectra of anatase TiO₂ a) mesoporous b) nanoparticles

Table S1 - External diameters calculated for various shapes so that the quadrupolar-like vibration frequency matches the ones observed by low-frequency Raman scattering.

	Sphere	Shell	Cylinder	Tube
12.6 cm^{-1}	d=8.7 nm	d=16.2 nm	d=7.7 nm	d=14.2 nm
22.7 cm^{-1}	d=4.8 nm	d=9.5 nm	d=4.3 nm	d=8.2 nm

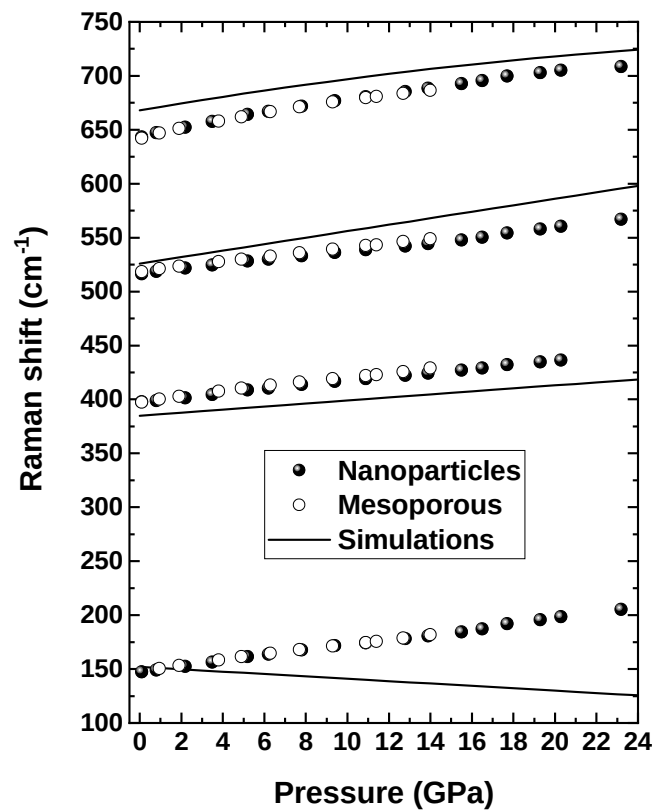


Figure S3 - Comparison of the pressure-induced variations of the Raman-active modes for nanoparticles and mesoporous TiO₂ along with ab initio simulations [1]

References

1. L. Saviot, D. Machon, L. Debbichi, A. Girard, J. Margueritat, P. Krüger, M. C. Marco de Lucas, A. Mermet, J. Phys. Chem. C 118 (2014) 10495-10501.