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Title
Structural and microscopic relaxations in glycerol: An inelastic x-ray scattering study
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Abstract
The THz dynamics of liquid glycerol has been probed by inelastic x-ray scattering at different pressure spanning the 0.66-3 Kbar range. A comparison with ultrasound absorption results available in literature leads us to identify the presence of two different relaxations, a structural (slow) relaxation and a microscopic (fast) one. Although the former has been already thoroughly studied in glycerol by lower frequency spectroscopic techniques, no hints on the latter are so far available in literature. We observe that the characteristic timescale of this fast relaxation ranges in the sub-picosecond, tends to decrease with increasing the wave-vector and seems rather insensitive to pressure changes. Finally, the timescale and strength of the fast relaxation have a direct link revealing the microscopic, single particle, nature of the involved process. (34 References).