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4D in situ microtomography in materials science

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X-ray tomography is becoming a standard characterisation in a numerous materials science research field : room or high temperature damage in composites of metals, solidification, sintering ...[1] More than 3D images it is possible since several years to perform 4D investigation providing dedicated experimental set up are developed. For example 4D studies were performed in various domains : bubble growth and foam setting during breadmaking, solidification of aluminium alloys, damage in metals at room or high temperature, sintering ... The main improvement in the last 10 years in 4D analysis with X-ray tomography lie in the improvement in images quality, field of view, spatial resolution, scan time and multiresolution possibilities. We will present possibilities and limits of the techniques with some application in various fields of material science (solidification, damage in materials, phase transformation ...).

REFERENCES

[1] E. Maire, P. Withers, International Materials Reviews vol 59, n°1, (2014), 1-43.

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