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6D Metaimaging; a new frontier for National Facility Science¹ CHRISTOPH RAU, Diamond Light Source, MICHAEL BAKER, SARAH BATTS, NEIL BOURNE, University of Manchester, SOFIA DIAZ-MORENO, Diamond Light Source, DAVID EASTWOOD, ALEX GREENAWAY, SARA NONNI, CHRISTOPHER PARLETT, KALPANI VITHERANA, PAUL WADY, ROBERT WEATHERUP, University of Manchester, UOMAH TEAM, DIAMOND LIGHT SOURCE TEAM — We have created a portal to extreme science at the UK national laboratory site at Harwell (University of Manchester at Harwell; UoMaH). This partnership, between the UoM, STFC and DLS has created a core team to assist users and work with the facilities to drive innovation. Further, we have recruited ten fellows, each championing a strategic area, to build teams, grow and populate each theme. We are on course to create an international beacon across national facilities science, partnering with stakeholders and other research establishments. We work with other national labs around an agreed joint theme; meta-imaging. This is the means to observe a structure and probe its mechanical state in 3D under differing applied electromagnetic fields, to determine the elemental and electronic state of constituent phases as a function of time; the 6D metaimaging of extreme dynamic behaviour. By combining sources (neutrons and X rays) and data analytics, we track chemical, mechanical and biological states, so mapping the *genome of* structures in six dimensions.

¹UoM, DLS, STFC, UKAEA, HSE, Rosalind Franklin Institute, Faraday Institution, Ada Lovelace Centre

> Neil Bourne No Company Provided

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