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## Biomedical research with X-ray grating interferometry at TOMCAT

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Hard X-ray grating interferometry (GI) offers a unique combination of properties that renders this X-ray imaging technique especially suitable for the application in the field of biomedical research. First, GI delivers virtually non-destructive information on the micrometer scale and, thus, can be used either complementary or alternative to destructive methods such as histology. Secondly, GI intrinsically delivers three complementary aspects of the sample, which are related to absorption, phase and dark-field contrast. Third and most importantly, GI shows a particular high sensitivity towards density variations present in the sample.

We present an excerpt of the ongoing biomedical research at the TOMCAT beamline, where we take advantage of the unique properties of GI. This research is performed in collaboration with the Clinic for Cardiovascular Surgery of the University Hospital of Zurich, Switzerland. The examples include the monitoring of scaffold degradation in tissue-engineered heart valves as well as micro-structural analysis of calcified heart valves, where we used the complementary contrasts to simultaneously segment otherwise virtually inseparable tissue.

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