Grasping the matrix of the concrete for a repository.

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The concrete is composed of the cement paste with the aggregate. For the aggregate, rock such as the sandstone is used. Aggregate and cement paste perfectly do not adher, the coarse regions called void and transition zone in the interface are made. However, it was not possible to know the existence of such region only in indirect information in measuring devices such as mercury press-in method.

For the prediction of the soundness the long term of the concrete, it is necessary to accurately grasp the mechanism of elution and conversion of the calcium in the cement.

Especially It is considered that void and transition zone become main route of the mass transport in the concrete. X-ray CT is the influential technology which enables the acquisition of this real structure. Figure 1 shows cross section of concrete of 50% water-cement ratio. The boundary between cement paste and aggregate was not clear.

Figure 2 shows digitized cross section of concrete. It was not possible to confirm the transition zone. However we can find the is voids in the part boundary. In this term, we observed young-sample such as 56 days old. In next term we are going to observe leaching samples.

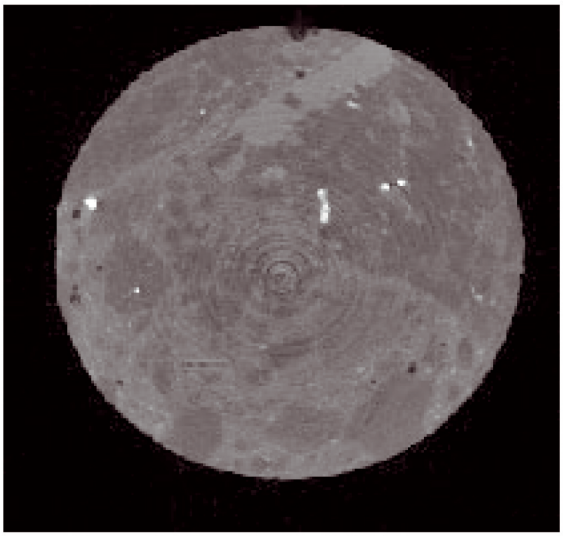

Figure 1: Cross section of before accelerated test

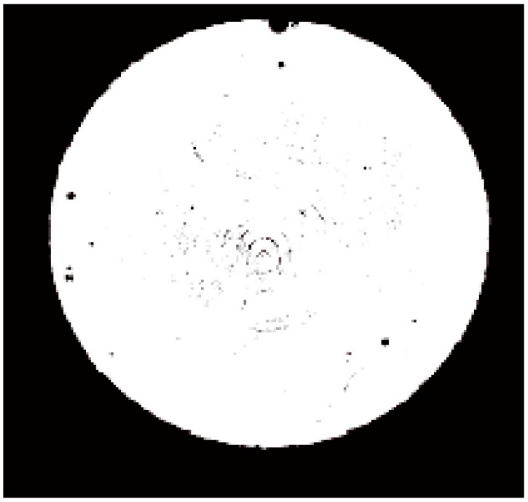

Figure 2: Digitized cross section of after accelerated test