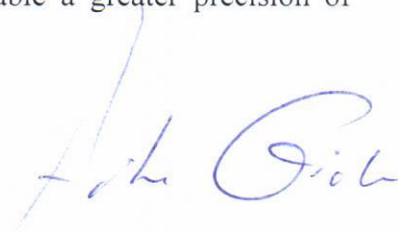


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The main goal of my PhD dissertation titled "Archaeological and architectural research using the luminescence method of dating on the example of the castle in Siewierz, the St. George Church in Biała Rawska and the Cistercian abbey complex in Sulejów", was to verify the chronological findings to date connected with the selected group of the stone brick and brick historical buildings in Poland. I was going to achieve that goal on the basis of the analysis of bricks and artifacts made of burnt clay with the use of thermoluminescence (TL) and optically stimulated luminescence (OSL) dating method. These methods are especially useful in archaeology because it allows us to date objects made of clay and burnt in temperatures above 350°C. Apart from the aforementioned bricks such objects include: ceramic pottery, stove tiles, roof tiles, floor tiles, burnt daub and many more. In other words, those are movable artifacts that are regarded to be materials of little chronological sensitivity, especially when they are heavily ground down and atypical. It is worth pointing out that current research on masonry monuments gives us little possibility of ascertaining their exact chronology since the conclusions are drawn from preliminary historical research, the analysis of bonding and brickwork, the size of bricks and the composition of mortar, i.e. elements that are poorly dateable and difficult to arrange in an undisputed order. Additionally, my studies are aimed at proving that currently only the TL/OSL dating method gives us accurate and unequivocal knowledge about masonry architecture.

The second aim, although no less important, was to create a new methodology of TL/OSL dating research, both for archaeologists and researchers of ancient architecture. So far, the method has mainly been used in geology, to research stratigraphic arrangements that are usually simple and whose dating does not have accurate to year or even a decade. In archaeology and architecture the situation is quite different so it will be a novelty to create from scratch a new methodology of selecting key places of a stratigraphic arrangement from which samples should be taken, the way of taking the samples, cataloguing and dating them and, finally, the advanced analysis of the obtained results made possible by the creation of a dedicated mathematical and statistical apparatus, which will enable a greater precision of dating.



To achieve abovementioned goals I was conducted a number of preliminary studies regarding the potential of TL/OSL dating and its perspectives for use in archaeological and architectural research. The most significant dating results include those concerning, castle in Siewierz, the Cistercian abbey complex in Sulejów, listed as a Monument of History and the, church of St. George in Biała Rawska, Cathedral Church in Opole, palace in Kutno, and some more. In Siewierz it was established beyond doubt that the first phase of settlement comprised the stronghold constructed in the early thirteenth century, and that the masonry tower of final defence was raised later in the same century, and not in the fourteenth century, as was earlier believed. These results were hailed as one of the most important discoveries in the Silesian Voivodeship in 2012 and were praised by the researchers that participated in the already mentioned first all-Poland *Colloquia Castrensia* conference. Equally significant proved to be the results of OSL dating carried out in Sulejów. It was possible to confirm the augmenting of fortifications in the early fifteenth century in the times of the abbot Salomon, and to determine the date for the construction and reconstruction of the old distillery. These results were of use for the Provincial Heritage Monuments Protection Office in Łódź in issuing conservation opinions regarding interior redesigning. Our projects at the Opole cathedral and the church of St. George in Biała Rawska brought a lot of new information about the time it was brought in and rebuilt.

Simultaneously, with the cooperation of researchers from the University of Warsaw, I created the first algorithms whose aim is to increase the precision of TL/OSL dating. Using them enabled us to diminish the degree of incertitude for the layers from the castle in Siewierz to about 25%, on the basis of only three TL/OSL dating measurements.