The link between defects in materials and the observed macroscopic behavior is often a difficult one to forge theoretically or computationally and remains an active area of research. Many of the fundamental mechanisms underlying the inelastic behavior of materials are mediated by crystal-lattice defects and are, therefore, accessible to direct atomistic simulation, either by means of empirical potentials or through ab initio quantum-mechanical calculations. However, in general atomic-scale mechanisms are separated from macroscopic behavior by a vast array of intervening continuum scales. These mesoscopic scales both average and set the boundary conditions or driving forces for the atomic-scale phenomena and are an essential part of the structure of materials. While effective at describing macroscopic material behavior, continuum theories tend to break down on the scale of the lattice, e. g., in the vicinity of lattice defects. Therefore, a complete understanding of material behavior, as well as the predictive computation of the material properties, requires both atomistic and continuum modeling. This would be the first IUTAM Symposium held in the city of Seville.

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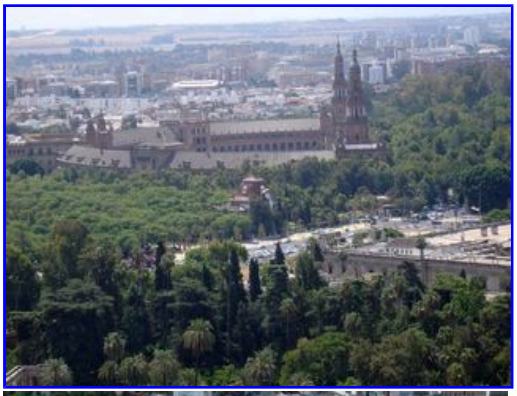

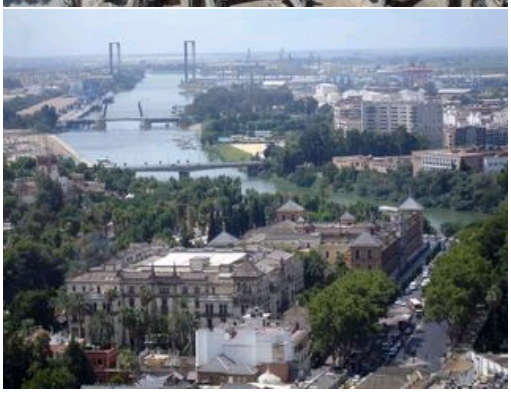

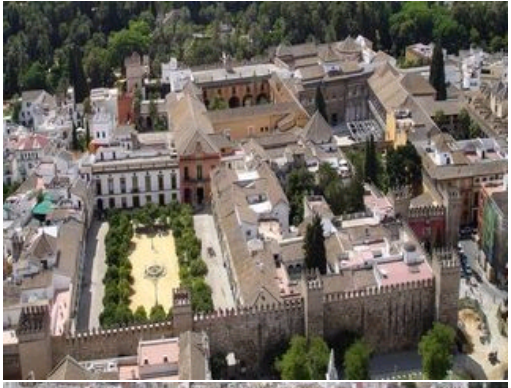

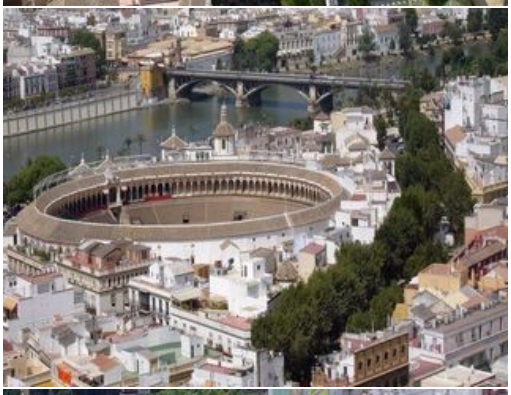

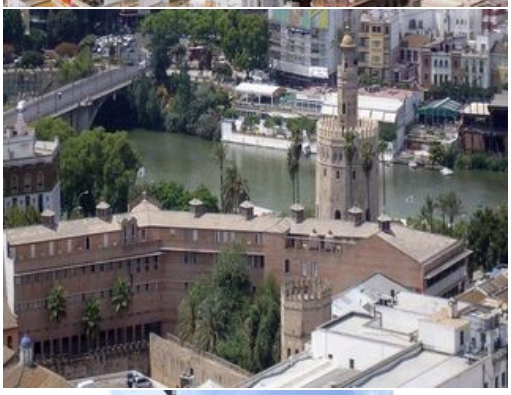

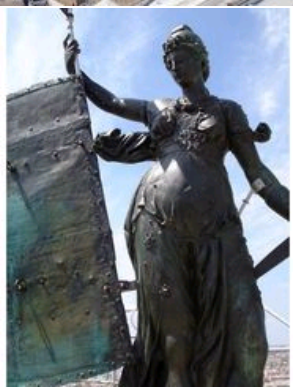

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