As a consequence of the architecture of the host system (e.g. nanoporous crystalline materials like zeolites), the diffusion rates of guest molecules into different crystallographic directions may be found to be interrelated with each other. As to my knowledge, this feature of structure-mobility correlation has so far been only discussed in the context of molecular guest-host systems like zeolitic adsorbate-adsorbent systems, though it might as well be applicable to diffusion in genuine solids. The quantitative expression of this interrelation is a function of the host geometry and of the correlation between subsequent diffusion steps (i.e. the particle “memory”). Following F. Jousse, S. M. Auerbach and D. P. Vercauteren (J. Chem. Phys. 112 (2000) 1531), a parameter set is introduced, which describes the particle “memory” and allows the establishment of closed forms for the correlation rule of diffusion anisotropy in zeolite ZSM-5/silicalite-1. These relations are shown to be in excellent agreement with the results of MD simulations. (© Kärger, 2003).