

Transient Interface Sharpening in Miscible Alloys

Zoltán Erdélyi, Marcel Sladeczek, Lorenz-M. Stadler, Ivo Zizak, Gábor A. Langer, Miklós Kis-Varga, Dezso L. Beke, Bogdan Sepiol

We observed that diffuse interfaces sharpen rather than broaden in completely miscible ideal binary systems. This is shown in situ during heat treatments at gradually increasing temperatures by scattering of synchrotron radiation in coherent Mo/V multilayers containing initially diffuse interfaces. This effect provides a useful tool for the improvement of interfaces and offers a way to fabricate better x-ray or neutron mirrors, microelectronic devices, or multilayers with giant magnetic resistance.

¹Department of Solid State Physics, University of Debrecen, Post Office Box 2, H-4010 Debrecen, Hungary. ²Nuclear Research Institute of the Hungarian Academy of Sciences, Post Office Box 51, H-4100 Debrecen, Hungary. ³Institut für Materialphysik, Universität Wien, Strudlhofgasse 4, A-1090 Wien, Austria. ⁴Hahn-Meitner-Institut Berlin, Glienicke Straße 100, D-14109 Berlin, Germany.

*To whom correspondence should be addressed. E-mail: zerdelyi@dragon.unideb.hu