SDS micellar solutions. The micelles structure changed to be more rod-like in major axis and then crossed the critical phase transition from micellar solution into liquid crystal phase as lamellar structure emerged by further addition of alcohols. The inter-lamellar distances were also depending on the hydrocarbon chain length and concentration of alcohols. While the persistent micellar structures occurred in addition of medium chain of *n*-alcohol, pentanol at all concentrations.

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Keywords: small-angle neutron scattering, micellar solution, micelles, liquid crystals, lamellar structure

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Structural investigation on InAs/GaSb thin films

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In the present work, InAs-GaSb super lattice thin films have been prepared and characterized. These thin films are widely used in detector technology because of their long carrier lifetimes and high detectivities. While the Molecular Beam Epitaxy (MBE) method is used for the synthesis of the studied thin films, X-ray diffraction (XRD), Dynamic X-ray simulation and X-ray scattering (SAXS and WAXS) methods have been also used to access structural knowledge. Molecular and nano scale structural information such as thickness, density, internal structure, inhomogenities, inner surfaces, repeat distances in partially ordered nano aggregations etc. have been obtained from thin film samples with surface area of 5x8 mm^2. The rocking curves related GaSb substrate (004), InAs and InAs-GaSb layers and the transmitted scattering profiles of the thin films have been recorded by using CuK$_\alpha$. Fig.1. shows the XRD pattern and the simulation results of a studied sample. At the end of the structural characterizations, the well prepared samples have been determined.

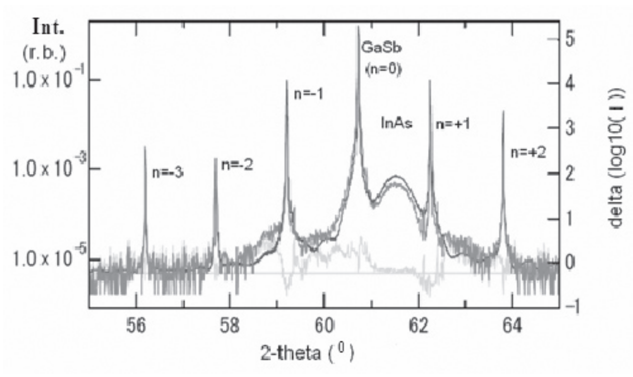

Fig.1. XRD pattern (red color) and dynamic simulation result (blue color) of a studied InAs-GaSb thin film

Keywords: thin films, InAs/GaSb, XRD, SAXS

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Examination of structural changes in the tendons during the healing process

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Tendons are bands of dense connective tissues which connect muscles to skeletal elements and transmit force generated by muscles to bones. Structurally, tendon is composed of tenoblasts and tenocytes lying longitudinally in a network of different collagen molecules. Tenocytes are responsible for the production of extracellular components of tendon that consists of collagen type I, III, V, proteoglycans, fibronectin and elastic fibrils. The largest component of tendon tissue is primarily collagen type I (COLI) and III (COLIII) which are providing unique tensile strength properties. Cross-linking between Type V collagen (COLV) and fibrils improves the forming a core structure for type I fibrils to bind and form a more stable/compact fibril package.

In the experimental researches, adult male Wistar albino rats (8-10 weeks old) were used. The reconstruction processes with/without application of tendon grafts were examined after the main phases of the acellularization of flexor tendons, reseeding of acellularized tendons *in-vitro*, *in-vivo* implantation of reseeded tendon constructs. The sutured Achilles tendons were isolated, and their 0.2-cm-long sections were used in structural analysis and mechanical tensile testing.

Before and after the mechanical testing, the structural analyses of the tendons were carried out by SAXS and WAXS methods. Molecular and nanosized structural details tried to investigate by the scattering data analysis and the constructed structural models. Structural parameters were refined by fitting experimental data with theoretical results.

At the end of the data evaluation, the present researches have showed that the native tendons may be used in improving biomaterials for tissue engineering.

Keywords: SAXS, WAXS, collagen

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***In situ* diffraction studies into the formation of jarosites**

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Jarosites, $AFe_3(SO_4)_2(OH)_6$ (where A is typically K, Na or H_3O), and related minerals are of great importance to a range of mineral processing and research applications. They are deliberately precipitated in order to remove unwanted iron from process solutions in hydrometallurgical circuits. They also form in bioleaching systems and flotation circuits involving bacterial conditioning, but here they form kinetic barriers to further reaction. They occur in acid mine drainage environments and there has been a recent resurgence in interest in jarosite since its identification on Mars by the MER rover Opportunity. Jarosites are also of considerable theoretical interest as model compounds for spin frustration in kagomé-Heisenberg antiferromagnetic materials. Knowledge of their nucleation and crystallisation mechanisms is an indispensable prerequisite for the understanding of conditions which enhance or inhibit their formation thus allowing control of their occurrence in a range of environments.