



RESEARCH CENTRE "URALSEMICONDUCTOR" УРАЛСЕМИКОНДАКТОР

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We propose the PROJECT, Developments and Products for Partners and Investors.

The PROJECT: Outdoor infrared fire detection and alarm system.
The panoramic ground-mapping 4-channel infrared bearing finder (5..7 or 18-22 km), R&D

High-speed photodetectors of spectral range 0.25÷5.5 μm

based on nanofilms of ultrapure CdPbS, PbS and PbSnSe.
Parameters below are for the temperature 295 K.

- 1.1. **Ultrafast photoresistor PbS**, time response $\tau = 5-8 \mu\text{s}$, $R_{\square} = 300-500 \text{ k}\Omega$, $\Delta\lambda = 0.25-3.5 \mu\text{m}$, $D^* = (1-2)10^{10} \text{ cm W}^{-1} \text{ Hz}^{0.5}$. **Composite superstructure**, $h = 400 \text{ nm}$, a sandwich of 15 layers.
- 1.2. **Photoresistor Cd₁Pb₁₅S₁₆**, $\tau = 20-30/50-75 \mu\text{s}$, $R = 10-20 \text{ meg}\Omega$, $\Delta\lambda = 0.25-2.4 \mu\text{m}$, $D^* = (10-14)10^{10} \text{ cm W}^{-1} \text{ Hz}^{0.5}$. This is a **super structural chemical compound, a completely ordered phase of solid solution**.
- 1.3. **Photoresistor PbS**, $\tau = 50-75 \mu\text{s}$, $R = 40-120/300-500 \text{ k}\Omega$, $\Delta\lambda = 0.25-3.3 \mu\text{m}$, $D^* = (3-6)10^{10} \text{ cm W}^{-1} \text{ Hz}^{0.5}$.
- 1.4. **Photoresistor PbSnSe**, $\tau = 2-4 \mu\text{s}$, $R = 30-100 \text{ k}\Omega$, $\Delta\lambda = 0.5-6.0 \mu\text{m}$, $D^* = (2-3)10^8 \text{ cm W}^{-1} \text{ Hz}^{0.5}$ (R&D stage).
- 1.5. Also **photoresistors from points 1.2..1.4 above cooled by TEC** (1-2-3 cascades). They have intermediate and limiting characteristics of voltage sensitivity and detection capability at a essentially lower time response and dark resistance with respect to analogues. Photoresistors based on ultrapure and stoichiometric films **have a high stability** of characteristics during the lifetime. It is confirmed by our observations for the period **from 10 to 30 years** depends on the photoresistor type.

Photodetecting devices for various purposes

- 2.1. **Photodetecting device «Sigma» for Spacecraft** studies of natural resources, five-channel, cooled, spectral range $\Delta\lambda = 2.1-2.35 \mu\text{m}$. Successfully worked in the «MSU-V» (the satellite program «Ocean-O»).
- 2.2. **Photodetecting device PDD-20**. Equipped with radiation modulator. ($\Delta\lambda = 0.25\div 5.5 \mu\text{m}$).
- 2.3. **Photodetecting device, universal, cooled «Sigma-09/U»**, ($\Delta\lambda = 0.25\div 5.5 \mu\text{m}$).
- 2.4. **Photodetecting device of 4.3 μm , 2 chan.**, sensitive, for the system detecting gravitational waves.
- 2.5. **Power meter of UV-laser for medical purpose**, $\Delta\lambda = 0.25-0.4 \mu\text{m}$, $\tau = 5-8 \mu\text{s}$.
- 2.6. **Studying-and-training aids «Optoelectronic kit Rainbow-64»** (R&D stage).

Optical instruments for measuring the turbidity

- 3.1. **Liquid analyzer, turbidimetric, АЖТ-94**, flow-through-type, range 0.2-80 mg/l. Equipped with transparent manostat to stabilize a sample flow rate and with the transparent chamber to remove air micro bubbles.
- 3.2. **Signal-turbidimeter for liquid, ЦШР-91/5**, flow-through-type, two-channels-type, range 20-800 mg/l.
- 3.3. **Liquid analyzer, nephelometric, АЖН-98/ПК**, flow-through-type (without contact of optics with water), for sludge liquids, measuring range (0.1-16000 mg/l), divided into 4 sub-ranges.
- 3.4. **Liquid analyzer, АЖН-98/ПГр, portable**, with dipping sensor, range 0.1-6000 mg/l.

Social and public activity of the Centre

4. **Health Promotion Device** "Pulsar-Premium" ("Zapper USC"), portable, produced from 2009 year: rehabilitation of immunity, stimulation of internal organs function, suppression of parasites. Equipped with an electrochemical cell for the enrichment of water with silver and copper. Certificate of compliance NC-0041905 from 05.03.09 CRBB 002/97 in the Registry ROSS RU.0001.04 ЮЦ000С001.
5. **In Social and public sphere** the Centre conducts lectures, consultations and practical workshops on Mindset and Healthy Lifestyle since 2003. We offer approved **Methods of Harmonization** of mind (behavior), **Activating and Developing of Creative Abilities of Human** by determining the **Meaning of Life (Reason-for-being)** as an **Evolution in Creative Activity, Bio-body and Society**, as well as being aware of and able to control a personal self-energy. Visit our Evolution site: www.svet-ural.com

The Centre was created in 1989 year, has more than 100 inventions. This is an Innovative Enterprise in the field of Optoelectronics, Psychology and Methodology.

Project and production presentation see on our site <http://uralsemiconductor.ru/english-version.html>