The text outlines the research and objectives related to the impact of new wall materials on impurity transport, pedestal performance, and core-edge integration in fusion reactors. Key points include:

1. **Impurity Transport and Mitigation**:
   - Investigate impurity transport in the pedestal and methods to mitigate core penetration.
   - Assess compatibility with non-ELMy or suppressed ELM scenarios.
   - Reduce intrinsic plasma impurities to maintain a low effective charge (Zeff) in the core.
   - Explore if neoclassical impurity screening can be achieved in the pedestal.
2. **Pedestal Performance**:
   - Evaluate the impact of wall materials on pedestal performance, especially under non/small ELM scenarios.
   - Determine if metal contamination from large ELMs affects access to peeling-limited pedestal conditions.
   - Investigate whether longer divertor legs with increased closure can mitigate operational challenges.
3. **Core-Edge Integration**:
   - Demonstrate high-performance plasmas with reactor-relevant wall materials, such as high beta_N steady state, high-beta-p, QH-mode, and RMP ELM suppressed H-mode.
   - Ensure wall materials do not negatively impact edge pedestal or core plasmas.
   - Adapt and develop high-performance scenarios using reactor-relevant walls.
4. **Material Effects**:
   - Examine the impact of different wall materials (e.g., tungsten, silicon carbide) on impurity transport and retention.
   - Assess the effects of ELMs and ELM mitigation on impurity transport from the divertor and first wall.
   - Validate chosen wall materials for core-edge integration without compromising advanced scenarios or diagnostic measurements.
5. **Performance Boost and Reactor Relevance**:
   - Provide plasma physics output and ITER/reactor scenario development with reactor-relevant wall materials.
   - Investigate heating schemes that flush out impurities and enhance performance.
   - Demonstrate core-edge integrated scenarios with materials that have appropriate radiation properties.
6. **Experimental and Predictive Capabilities**:
   - Use DIII-D's flexibility and operational space to test and understand impurity transport, edge performance, and core-edge integration.
   - Develop high fidelity modeling for extrapolation to reactors.
   - Compare impurity transport and retention among different materials in various regimes.
7. **Key Deliverables**:
   - Large-scale implementation of innovative materials and wall management technologies.

- Demonstration of fusion power plant (FPP) relevant core-edge solutions.
- Development of predictive capabilities for reactor-relevant plasma conditions.

Overall, the research focuses on understanding and mitigating the impact of new wall materials on plasma performance, impurity transport, and achieving high-performance, reactor-relevant scenarios in fusion devices.