

Fujikura Fiber Optics Vietnam Ltd.(FOV)

**Training Textbook: 000-1-TT-0015**

**Phiên bản: 1**

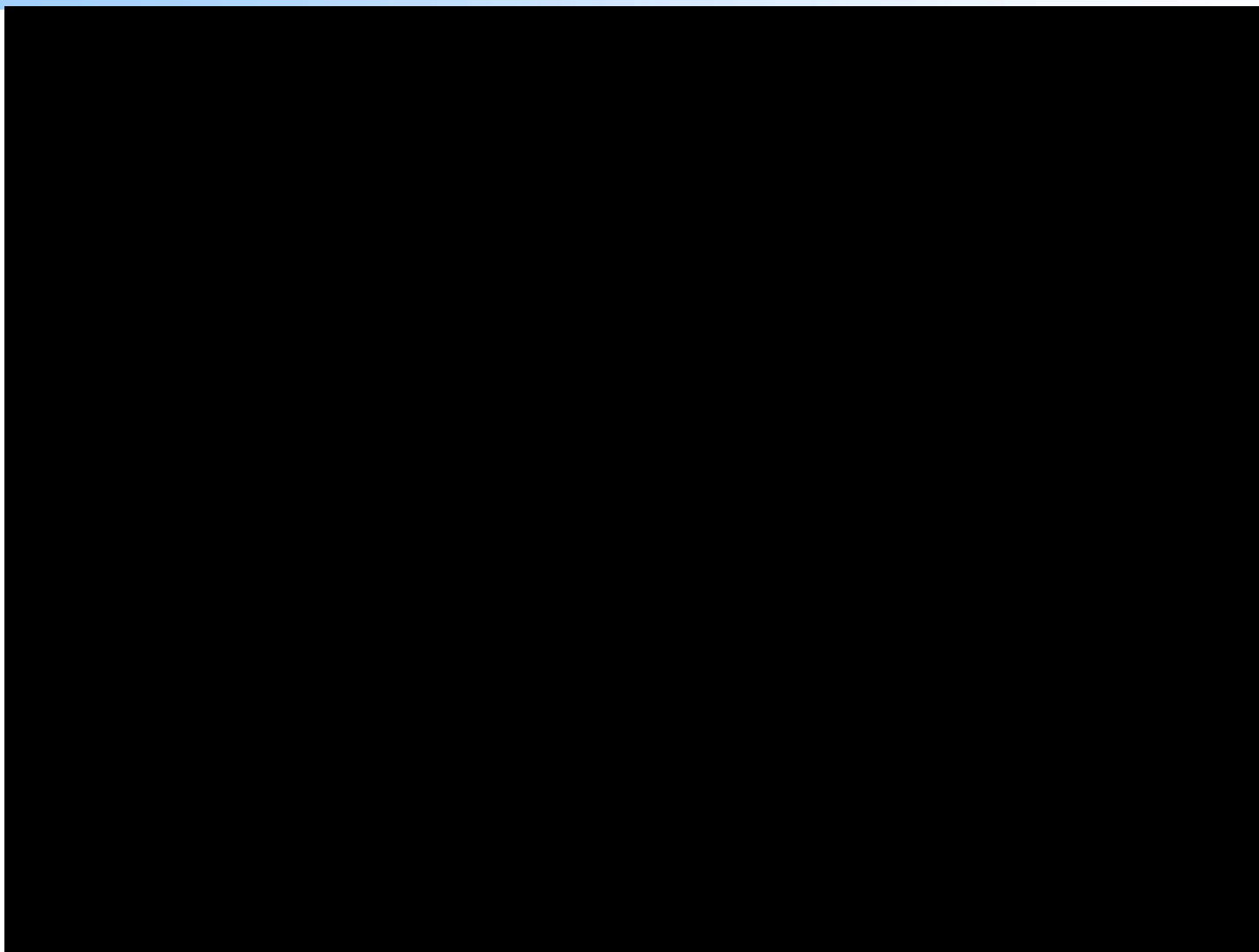
# IVUS Catheter manufacturing

# Contents

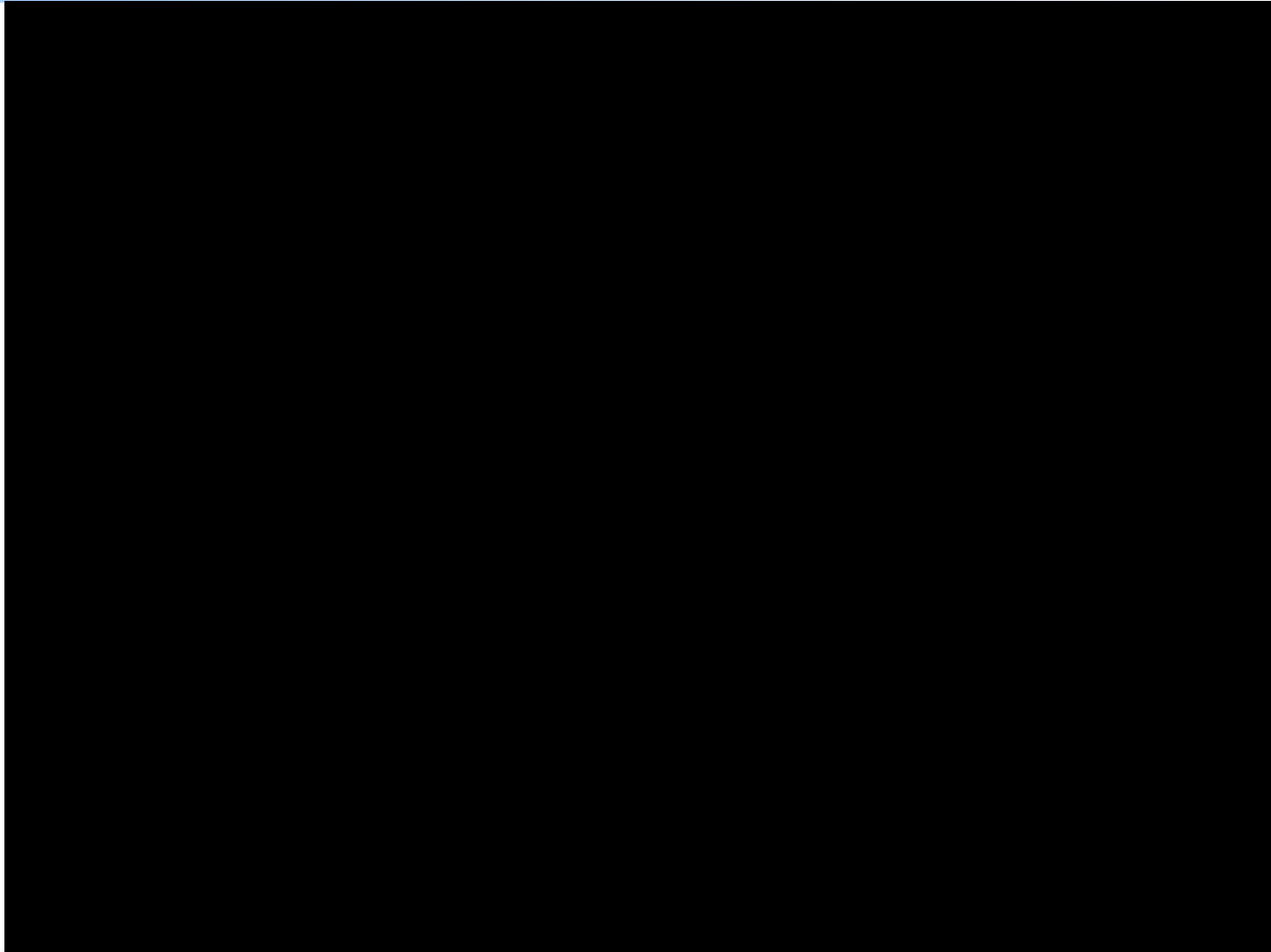
- Heart attack and treatment
- IVUS Catheter structure
- IVUS Catheter principle and advantage
- Brief project introduction

# Heart attack and treatment

# What is a Heart Attack?



# Pathophysiology: Vulnerable Plaque

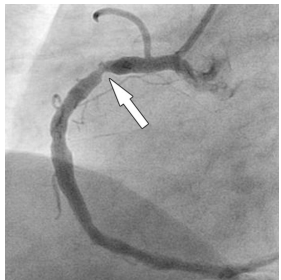


# Two treatment options for CAD

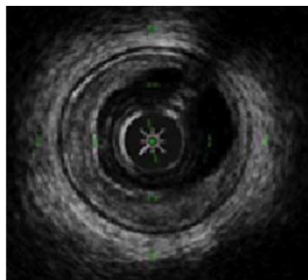


Open Heart Surgery

**Invasive  
CABG  
Surgery**  
(Coronary Artery  
Bypass Graph)



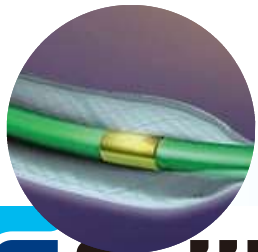
Angiogram



IVUS



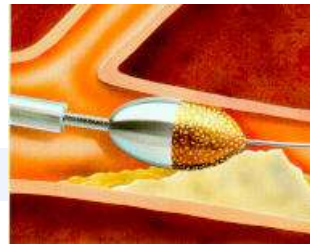
FFR



Balloons



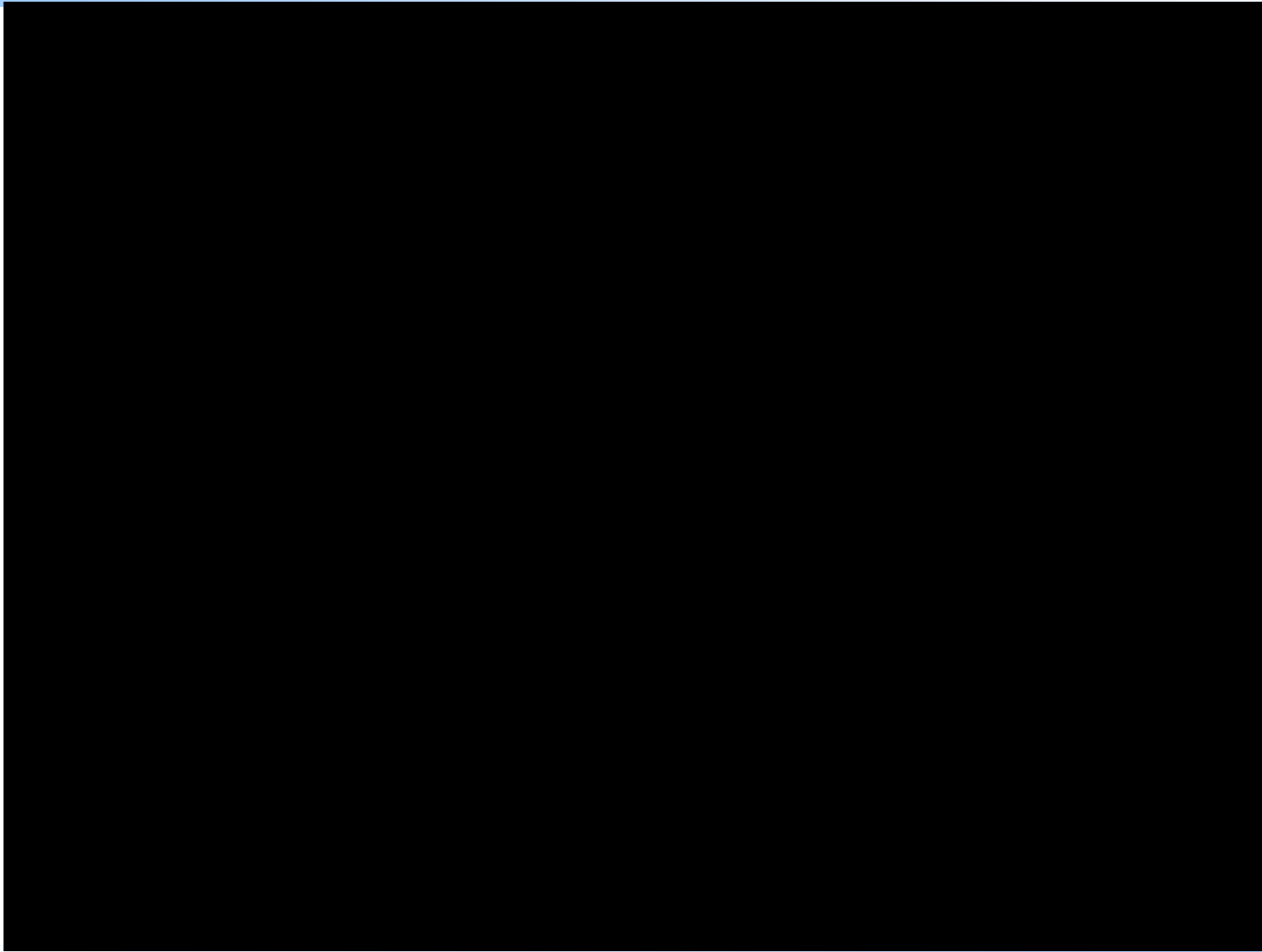
Stents



Atherectomy

**Minimally Invasive  
PTCA**  
(Percutaneous  
Transluminal Coronary  
Angioplasty)

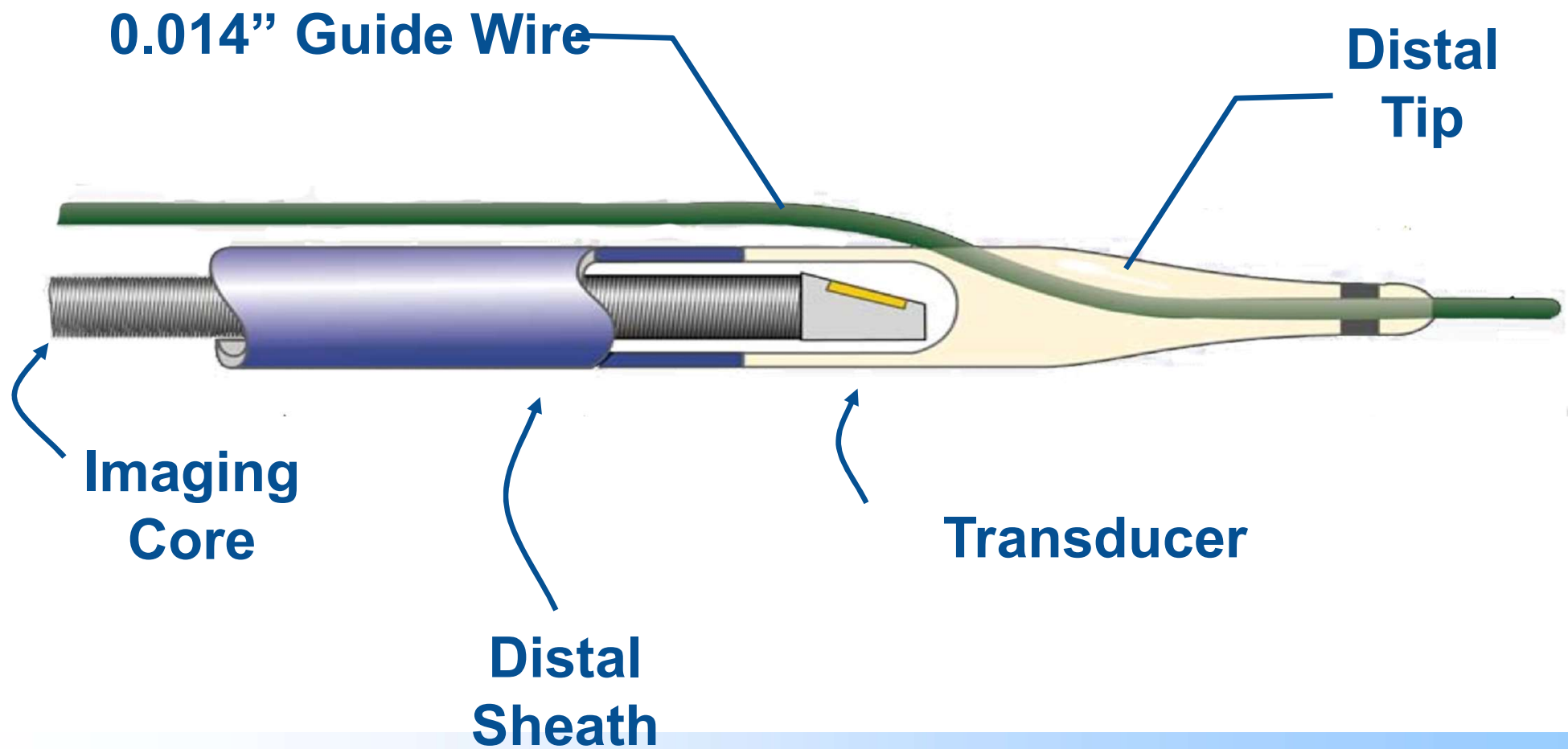
# PTCA (Percutaneous Transluminal Coronary Angioplasty)



# IVUS Catheter structure



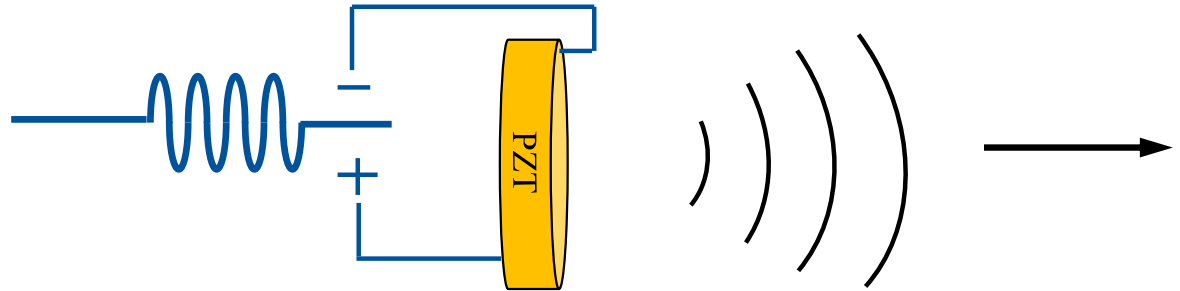
# Mechanical IVUS Catheter Features



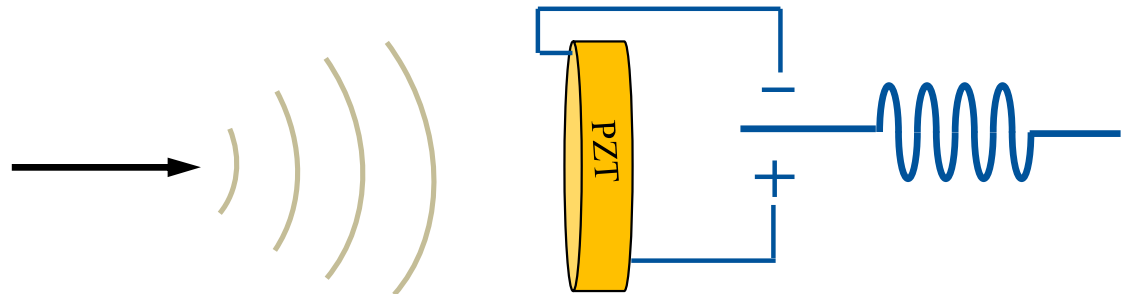
# Piezoelectric Effect

Ultrasound transducers use the piezoelectric effect to convert electrical energy into mechanical energy and mechanical energy back into electrical energy

Electrical to pressure  
(acoustic) wave  
transformation



Pressure (acoustic)  
wave to electrical  
transformation

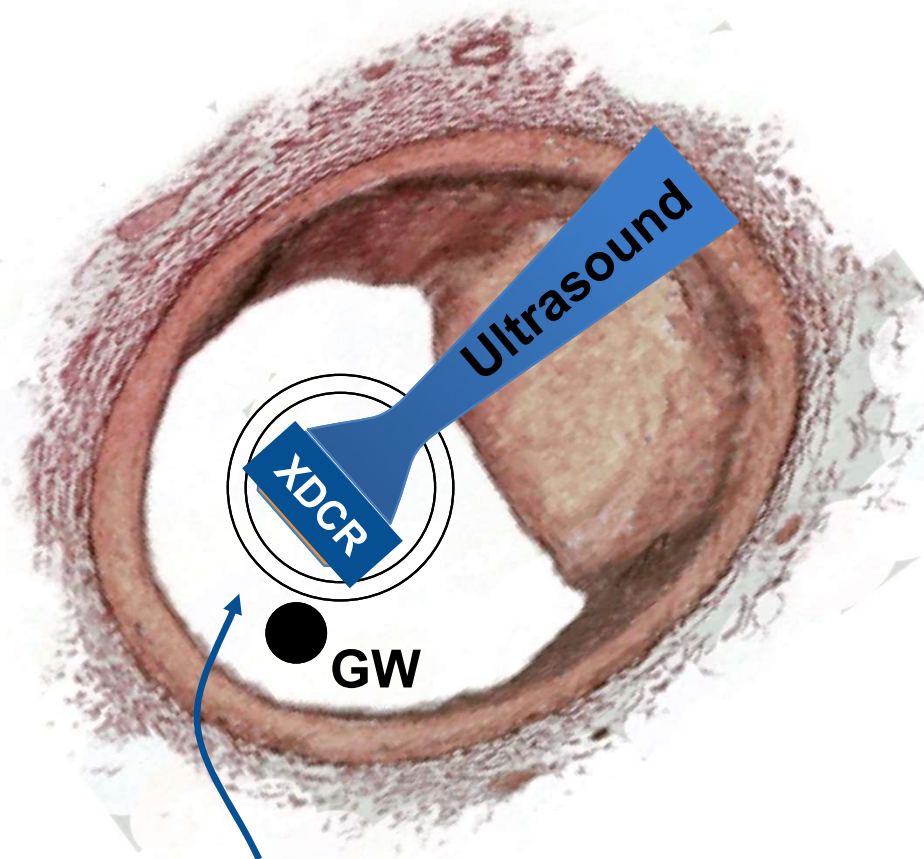


# **IVUS Catheter principle and advantage**

# IVUS Uses Standard Imaging Techniques

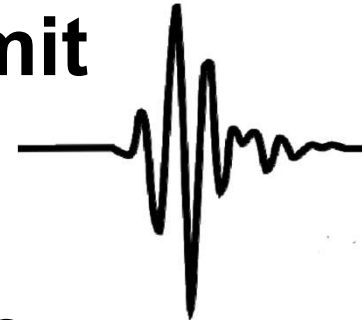
- Confidential -

Diseased Artery

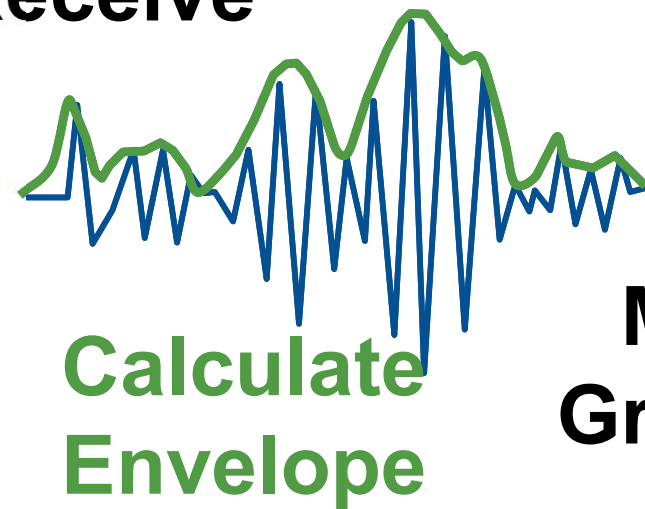


IVUS Catheter

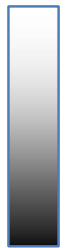
Transmit



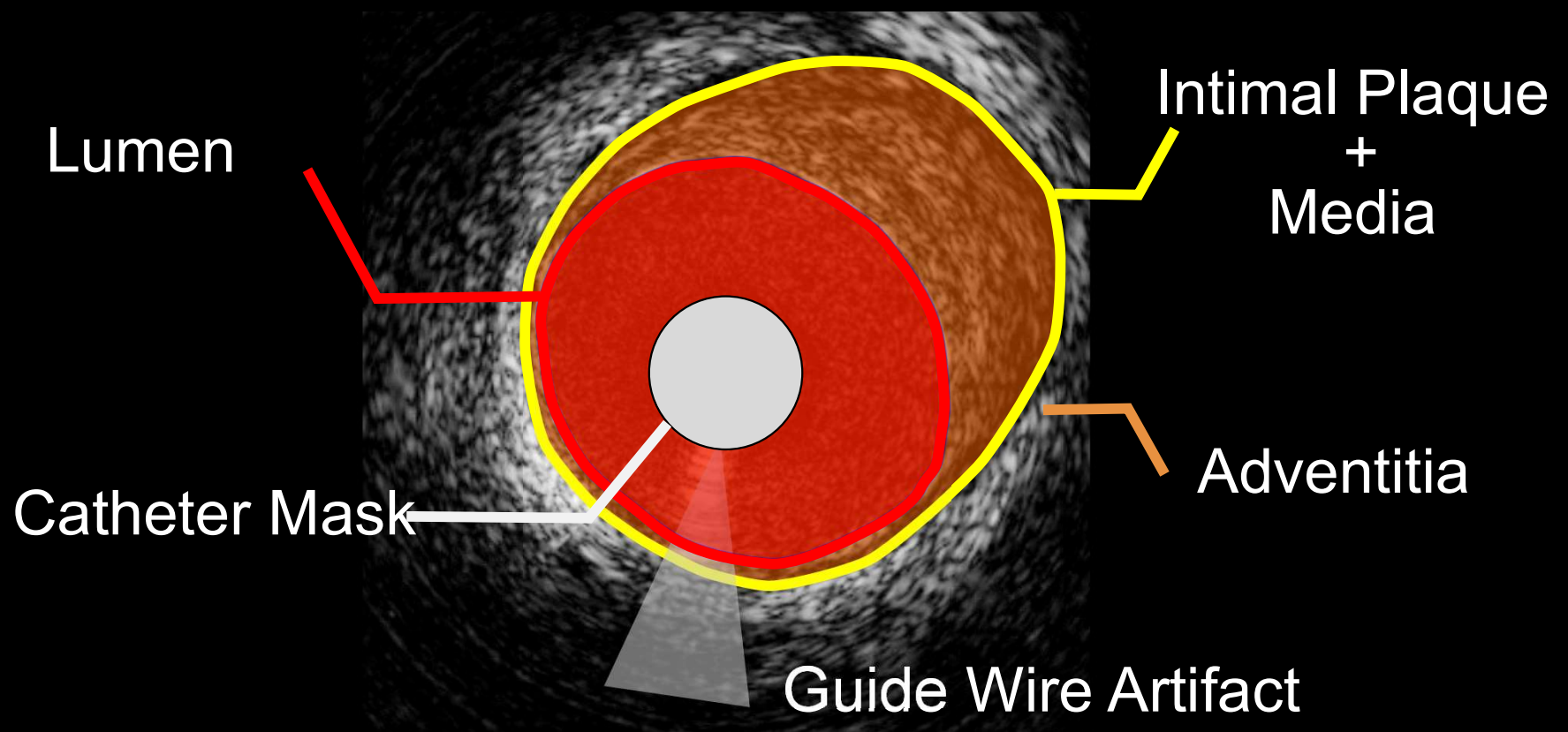
Receive



Map to  
Grayscale



# Anatomy of an IVUS image



# IVUS is used to optimize outcomes

- Pre-Intervention
  - Measure vessel size (diameter and length) to select stent size using one of several strategies.
  - Identify proximal and distal reference segments or landing zones (largest lumen with least plaque) to select stent length.
- Post-Intervention
  - Insure Adequate Expansion and Position.
    - Absolute stent cross-sectional area (CSA)
    - Stent CSA relative to a pre-defined reference
    - Full lesion coverage (correct placement)
  - Identify and resolve edge complications

Thank you for your  
kind attention!

**Biểu mẫu lịch sử thay đổi**

<b>Ngày</b>	<b>Người thay đổi</b>	<b>Phiên bản</b>	<b>Mô tả</b>		<b>Lý do thay đổi</b>	<b>Người yêu cầu thay đổi</b>
			<b>Nội dung cũ</b>	<b>Nội dung mới</b>		
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