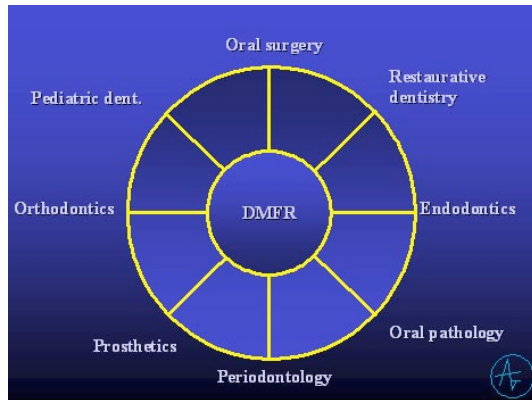


# Imaging Technics in Dental Radiology

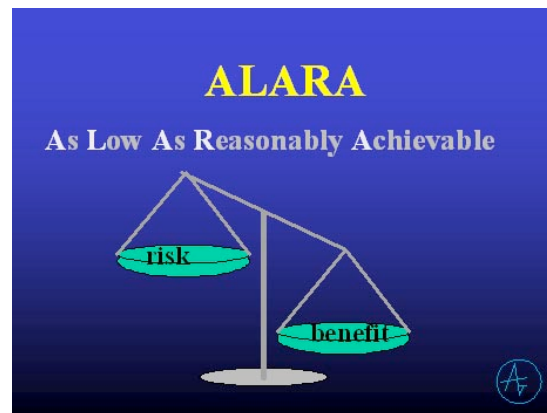
Dr. Gábor Ackermann

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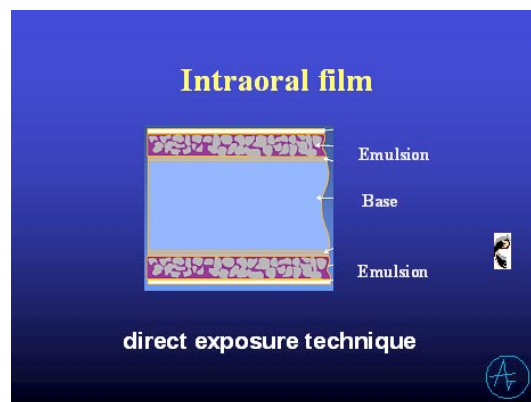
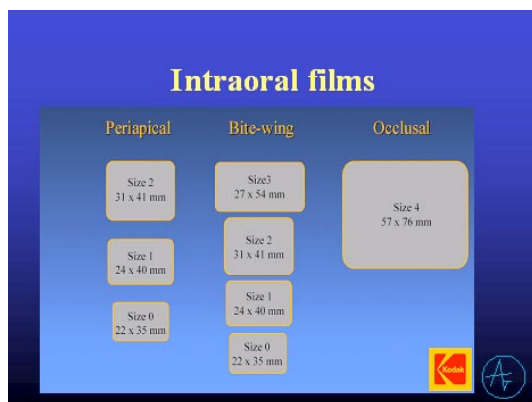
## The aim of radiography

- Help diagnostic work
- Baseline radiograph
- Treatment plan
- Follow up examination
- Documentation



# Imaging technics

- **intraoral**
- **extraoral**
  - › plain
  - › panoramic
- **special**
  - › tomography, CT, MRI, US,
  - › PET, SPECT

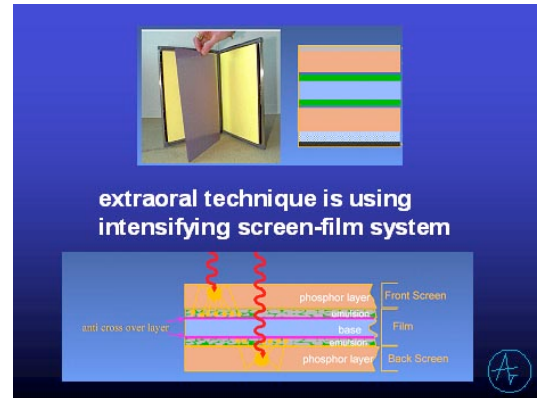


## X-Ray Film

- **intraoral is direct exposure technique**
- **extraoral technique is using intensifying screen-film system**
- **2 major differences between intraoral and extraoral films:**
  - **silver content**
  - **chromatisation (spectral sensitivity)**

## Extraoral film

- 15x30 cm, 10x24 cm - panoramic
- 13x18, 18x24, 24x30 cm - plain films



- intra-oral films contain more silver than extra oral films (4 to 5 times more)
- the emulsion of intra-oral films is thicker than the emulsion of extra-oral films
- different film types can require different processing conditions

## Image formation

### •Physical rules

absorption

### •Geometric rules

Radiogram:

- Magnification
- Distortion
- Summation
- „forget”

Central projection

## Basic steps

- Position of patient's head
  - Sagittal and occlusal planes
- Film positioning

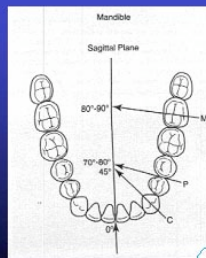
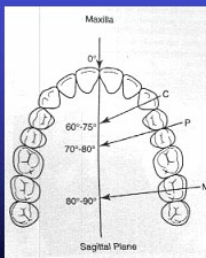
### Filmholder with aiming device

image quality  
radiation protection  
standardisation

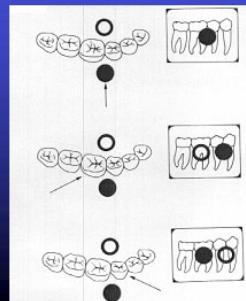


- Tube positioning
  - Horizontal angulation

### Horizontal angulation



### Buccal object rule

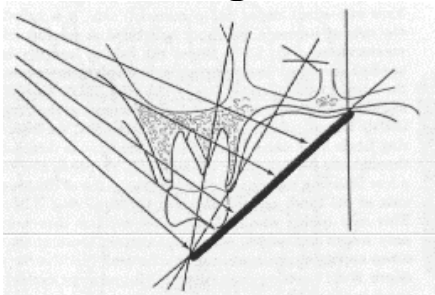


orthoradial

distoexcentric

mesioexcentric

### –Vertical angulation



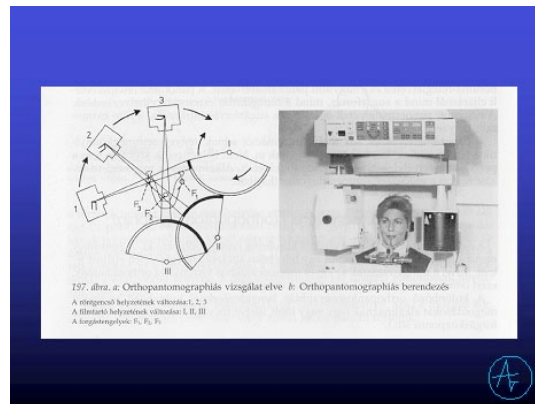
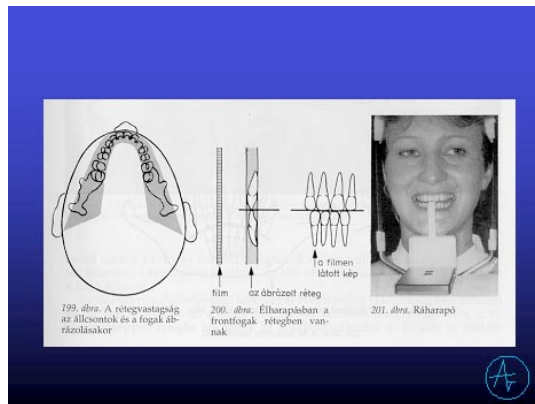
### –Centering

To position the enter point of the cental beam

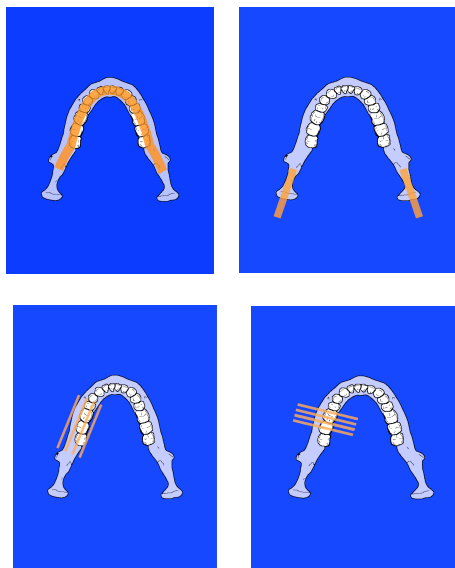
# Intraoral projections

- Bisecting angle
- Paralleling
- Crown view
- Bite-wing
- Occlusal

## Panoramic technic



## Advanced panoramic technics



# Digital imaging systems

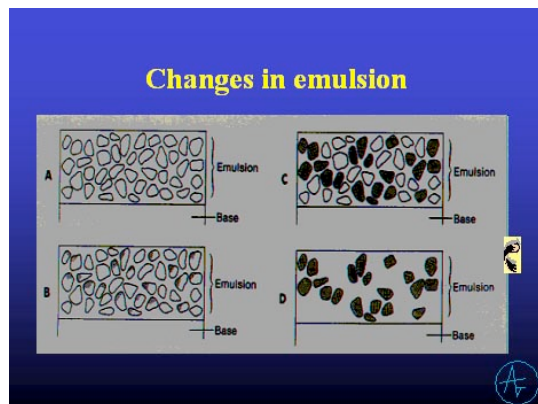


## Exposure time depends on

- Tissue
- Film speed
- Developer chemicals
- Source-film distance

## Processing

- a latent image (non-visible image) is formed when silver halide crystals ( $\text{Ag}^+\text{Br}^-$ ) are exposed to X - Rays ( Intra -Oral) or light (Extra Oral)
- to produce a visible and archival image the film must be processed
- processing has a critical influence on image quality and patient dose
- processing can be done manually or automatically



## Steps of Processing

- **Developing**
- **Rinse (only for manual processing)**
- **Fixing**
- **Washing**
- **Drying**

## Viewing conditions

- **Viewing box**
- **No surrounding light**
- **2x magnification**

## The way of thinking

